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Some Aspects of the 1923 Convention

THE convention this week at Atlantic City is one of the greatest the American Eletric Railway Association has held. It establishes a new record both as to registration, the final being 4,347, and as to amount of exhibit space sold, which was 76,276 sq.ft. The exhibits were most interesting and attractive, and the exhibit hall was never before so beautifully decorated. The layout of exhibit space was also favorably commented upon this year.

A feature of the exhibits that was noticeable and much talked about was that 24 per cent of the total space sold was for buses. More than thirty buses were shown, but strangely enough not one railway car (except the Toonerville Trolley, which made quite a hit for one of the exhibitors). On the other hand there was no end of railway equipment and maintenance materials exhibits, but no maintenance equipment for buses. While it is realized that it entails a very high expense to ship a complete car to Atlantic City, nevertheless it seems rather surprising that there should have been a total absence of cars at this convention in view of the very great interest and activity that have been shown in car design and construction during the past year.

The convention meetings were well attended and all arrangements seem to have been perfectly made. The program of the American Association was particularly full and this necessarily limited discussion to a very small amount. However, it is questionable whether substitution of discussion for some of the formal matter would have added value to the proceedings.

There has not been time as yet really to get a perspective of what was mainly accomplished by this convention. It differs from some preceeding conventions in that there seems to be no outstanding theme, though the meetings were certainly constructive and helpful. Apart from the meetings, however, two observations may fairly be made as characterizing the forty-second convention. The manufacturers were made most optimistic by the real buying interest of the railway men, the comment being that heretofore the visits to exhibitors' booths were more a matter of curiosity and handshaking than for the purpose of preparing for purchase. This of course is a very definite reflection of the improvement that has come in financial conditions in the industry.

The other observation in mind is that this convention undoubtedly marks the turning point in the predominent sentiment of the railway men from one of antagonism toward the bus to one of appreciation that it is a new transportation tool which they may well endeavor generally to bring into use in its proper sphere. The desire to quash the bus by fair means or foul has now largely been replaced by the more constructive attitude of studying how best to capitalize on the new vehicle.

What Is a Public Service Commission?

FIVE public service commissioners from as many states addressed the association at the Atlantic City convention. It was to be expected that these commissioners, devoting their time as they do to the study of utility problems, are all consistently in favor of the principles of commission regulation as an improvement over older methods of legislative and court procedure in governing utility operation. Nor was it surprising that, in analyzing the practice of commission regulation, these men should bring forward such varied reasons for lack of perfection that it might have seemed, even to themselves, that they were of different minds fundamentally.

But it is both important and significant that a real analysis of what they said shows that there is one fundamental idea underlying their thinking. This is that there is as yet neither in law nor in the public mind a clear conception of the commission's true function. The very practice, indeed, of some commissions shows this. This situation has been discussed in these columns before (see ELECTRIC RAILWAY JOURNAL, Feb. 11, 1922, page 223), but it should serve a good purpose to call attention to it once more. It is a matter of prime importance to utilities and also to the public.

One commissioner pointed out shortcomings in the law which forced his commission to decide questions on only a part of the considerations. Another commissioner showed how restricted regulation is incompetent to do the greatest good. Another said that the commissions were in many cases made mere magistrate courts for the purpose of making a record for appeal. What they all thought, taken together, means that commissions are still in the formative state. As courts of equity were created by a condition with which the courts of law could not adequately cope, so are commissions now being created by the condition that the public and the utility have learned that legislatures, courts of any kind, city councils, etc., could not adequately handle the character of problem presented by utility-public relations. Courts of equity needed years to grow into the position of respect and usefulness that courts of law previously held, and likewise commissions will take a certain formative period to reach the degree of perfection and respect most necessary for them to perform their functions with full effectiveness.

Commissioner Maloy was fundamentally sound when he urged a return to first principles in analyzing the commission situation. Commissions should not be confused with other institutions and they should not be

forced into a procedure out of tune with the purpose of their function. Commissions can work most effectively only when they are allowed to consider all the elements of a case confronting them. Commissions will never attain their utmost of usefulness until they have been given the support of all kinds which will encourage men of high caliber, of courage, of knowledge and of ability to accept and retain commissionerships. The fundamental principle of commissions should always be held in view as the goal to aim at. This principle is that a commission should sit as a business administrative body with full consideration of the economic, social and engineering features of the cases confronting it, to decide from the facts presented what is the best move in the interests of the public. Since eventually this procedure is also in the best interest of the utility, utility men can do no more effective work than to lend every effort to the continued upbuilding of commission regulation according to fundamental sound principles. In the end this will produce the greatest stability in utility operation.

Engineering Association Did a Good Job Last Year

THE decision to issue the Engineering Manual in bound form had a stimulating effect upon Engineering Association activities during the past year. The several committees naturally desire to have the book as nearly up to date as possible along their respective lines of work. They have, therefore, delved into almost-forgotten sections of the Manual, revising many, recommending the omission of others, and adding a few. The revision committee, also, has worked faithfully on a thankless task and has done it well. The Manual will seem more authoritative, somehow, in the bound form in which it is to be issued, and it certainly will be less clumsy.

The engineers also made a creditable record in getting the results of their work promptly into the hands of the American Engineering Standards Committee. They were stimulated by the time limit, lately removed, on the acceptability of applications under the abbreviated procedure. It was gratifying that so many standards were ready to be submitted without much revision. Co-operation with other organizations, such as the American Society for Municipal Improvements and the American Society for Testing Materials, also has brought excellent results.

At the Atlantic City convention the purchasing agents and storekeepers held a profitable meeting under the auspices of the Engineering Association. This solves a difficult association problem to the entire satisfaction of the specialists concerned, as is shown by the fact that they want the arrangement continued. This meeting will be reported in next week's issue.

The past year demonstrated the benefits of the sponsor system in committee work. The close co-operation thus maintained with the executive committee resulted in official backing for all worthy projects. The plan should, and presumably will be continued.

There must be something deeply absorbing in engineering to give engineers the incentive and patience to do committee work like that which is done for the Engineering Association so faithfully. It cannot but be a grind to work out specifications item by item. Its only object is to save money for the industry.

Great Committee Activity Shown by Reports

THE great amount of work that has been done by the various committees of the American Electric Railway Association and the affiliated associations has been impressed upon the editors by the work of the last two weeks in abstracting their reports. The reports of the committees have been prepared thoroughly and conscientiously, as the results achieved indicate.

Greater efforts than usual were made by both committees and association staff to get these reports completed and printed ahead of time, with the result that practically all the important reports could be edited and printed with less of the last-minute rush than usually characterizes the pre-convention days. Not only did this assure more careful work, but it permitted those in attendance at the convention to have before them copies dealing with the principal business of the sessions with which they were concerned.

The promptness with which this material was prepared has also been of great assistance to the editors in preparing this report issue. The issue, therefore, contains an extended report of the proceedings of the American, Engineering, and Transportation & Traffic Associations, according to the usual custom. The immense amount of material to be handled necessitates that the report of the Accountants' and Claims Associations be deferred until a later issue.

This paper wants to acknowledge the assistance of the executive secretary of the association and his staff for the splendid spirit of co-operation they have shown in furnishing advance copies of committee reports and papers, which have done much to make possible an early and full presentation of the proceedings of the sessions. Without this assistance it virtually would have been impossible to give as much attention as has been done in this issue to the discussions at the sessions, as otherwise the editors would have had to devote a very much larger portion of their time during the convention to abstracting reports and addresses.

Educational Committee Getting Down to Brass Tacks

AT THE Atlantic City convention educational representatives of member companies and professional educators met with the committee on education of the American Association for a luncheon conference on the subject close to their hearts. The conference lasted throughout the afternoon, so intense was the interest. There was an insistent demand for a definite program for educational work on an electric railway property, and steps in that direction were approved. President Budd, in a brief but factful address, put the association solidly behind the committee's work. He showed how essential is the furnishing of public utility information to employees and told how this is being done on the Chicago Elevated Railways. Mr. Budd practices at home what he preaches abroad. His experience will be helpful to next year's committee.

The machinery for doing a comprehensive piece of educational work in the association has been assembled. By the next convention there should be some tangible results on a number of properties, to be reported at the second annual educational luncheon. There is no subject in which the railway manager is more interested today than in educating his promising employees.

A.E.R.A. President Sees Industry Going Forward

By C. D. Emmons
President American Electric Railway Association
President United Railways & Electric Company of Baltimore

Bachrach

C. D. Emmons

Biggest Exhibit Bespeaks Live Industry—Public Relations Generally Improved and Essentiality of Railway Service Better Appreciated—Unfair Tax Burdens Need Adjustment—The Use to Which Railways May Put the Bus—Reasons for Opposing Municipal Ownership Stated—President Considers Year One of Progress

THIS is the greatest convention the association has ever held. In the exhibit halls is the largest exhibit of electric railway equipment, materials and supplies that was ever gathered under one roof. There is every indication that this will be the largest attended convention we have ever had, and I am sure that there never was a convention when more important subjects were up for discussion, or when it was more urgent that the closest attention be paid to the addresses and discussion.

The great exhibit and the large attendance here are the best answers one could make to the occasional detractor of the electric railways, who professes to believe that they are "dead." Here are representatives of electric railways that carried approximately 15,000,000,000 passengers in the last calendar year. Here are represented investors who have put more than $5,500,000,000 into electric railway properties to serve the people of this country. Here are representatives of electric railways and manufacturing companies that give employment to 500,000 men and women. Here are represented companies that purchase every year many millions of dollars worth of coal, steel, oil, copper, lumber and an infinite number and vast quantity of manufactured products, and by their purchases make no small contribution to the prosperity of our great nation. Who dares look upon this convention and say that such a tremendous gathering represents a "dead" enterprise? None but one who has his own ends to gain at the expense of truth and fair play would be so rash.

We meet at a time when the electric railway industry is in better condition than at any moment since the World War upset the equilibrium of the country. Much progress has been made since the convention in Chicago a year ago. More will be made in the year to come, for the public has learned that the service the electric railways are rendering is indispensable to its comfort, convenience and prosperity. In some places this knowledge has not come without interruption of service, but wherever service was interrupted, the fault lay not with the railways, which sought nothing but fair treatment.

Taking the country as a whole the public now has a better understanding of the mutuality of interest between the electric railways and the people, and this improved understanding has brought about revisions of rates of fare, partial alleviation of burdensome conditions, movements for protection of established and necessary service from incursions by irresponsible competitors and, in general, has paved the way for further relief from hampering obligations that have reacted against the public good.

Much has been done, but much remains to be done before this industry shall reach its maximum efficiency and be able to give the best service. We are encouraged by what has been accomplished during the last year; we look expectantly toward the year to come, confident that it will bring greater improvements.

Uppermost in the minds of many of you are the problems that have arisen in connection with the increase in the number of automobiles. Some of you have seen your business in sparsely settled districts drop until it has no longer paid the expense of operation. For a time it seemed as if you might have to quit, and so you would, had the public not found that the electric railway is the cheapest, most reliable, most responsible transportation agency.

Interurban roads have suffered not only from unfair, parasitic bus competition, but also because of the great increase in the number of privately owned automobiles, and many an urban railway has had to face the same situation. Nevertheless, it has been proved that the place of the electric railway is secure. Wherever a test has been made, the inevitable conclusion was that business could not prosper, that manufacturers could not conveniently carry on their enterprises, that home building could not expand, that public comfort could not be advanced without the electric railway.

One of the notable demonstrations of these facts was in Saginaw. More than two years ago, because of local political agitation and a popular misconception of the cost of supplying public transportation, Saginaw refused to make a reasonable agreement with the electric railway company, with the result that street car service was suspended. Immediately a flock of jitneys of all descriptions settled in Saginaw and attempted to give service. It was not long before the public discovered that there was a vast difference between the responsible, reliable, safe service given by the electric railway and the unsafe, hit-or-miss service given by the jitneys.

Of course such service was impossible, so Saginaw tried hard for two years to get some reliable person or corporation to install a city-wide bus service on the same basis as electric railways provide service—putting up the money themselves—but no satisfactory arrangement could be made with anybody. There were unreliable propositions by the score, including one to finance a company through popular subscriptions, which flattened out when only $5,000 could be raised, but not one reliable one that voters would indorse.

The details of the Saginaw experiment have been given in the trade press, particularly in the September issue of *Aera*, and I will not attempt to review them here. But I do want to lay emphasis on the fact that after two years of inadequate, dangerous, irresponsible, unsatisfactory bus service, the people of Saginaw went to the polls and registered a tremendous majority for the return of electric railway service. They had had two years of bitter experiences with an inferior substitute, and those experiences showed them that they had been wrong in their first conclusion, and today they are awaiting the resumption of the street car service that built up their community, that increased the value of their property, that helped make their business

ventures profitable and that gave them stability as a community which fly-by-night bus service never can give any community. Saginaw's experience was merely a repetition of that of the city of Bridgeport, of the city of Toledo and of Des Moines.

UNFAIR TAX BURDENS MUST BE REMEDIED

There are more than 12,000,000 automobiles registered in the United States. The number is likely to be greater, for the automobile fills a popular desire. However, I feel the saturation point is rapidly being reached, for there are serious problems of congestion in the large cities, the accident hazard steadily grows worse, and the situation but emphasizes the injustice of the paving obligations which many states and communities impose upon electric railways.

As you all know, the paving charge which so many of us have to meet is in fact a subsidy of automobile traffic paid by the car riders. Originating when horses hauled street cars and pounded the pavement between the rails, this charge became illogical and unjust when electricity became the motive power. The modern electric car does no damage to the pavement between the rails or outside them. The pavement is used entirely by other vehicular traffic, which causes whatever damage is done.

The report of the committee on special taxes will go into detail on this subject, and I want to recommend that you give it careful attention. It shows that 9.6 per cent of the operating revenue of railways reporting to the committee is paid to the federal, state and local governments in taxes and imposts. The taxes include special taxes for the support of schools, parks, bridges, highways, soldiers' bonuses and many other purposes; there are license fees of wide variety; many communities demand that the railways carry free of charge their policemen, firemen and other employees. In some places the United States government does not pay for the transportation of letter carriers, and we all know that it pays but a small part of the cost of carrying the mail. None of us raises objection to fair taxation, but as matters stand today we are unfairly taxed and imposed upon.

We have no quarrel with the private automobile owner and we have no quarrel with the bus except when the bus enters territory that is rightfully that of the electric railway. I say "rightfully" because the states and communities, in giving the companies the right to do business in the streets, retain to themselves the power to regulate service and control rates of fare. Having done that, the duty of the public to the railway should be obvious—the public must protect the railways in their rights, else the public itself will be the loser. I can think of no better presentation of the point I am trying to make than was made by the New Jersey Supreme Court a few weeks ago. In its decision handed down on July 18, 1923, in a case where a bus operator sought to be relieved of conditions made by the Public Utility Commission when it granted the operator a temporary permit to operate in certain communities, the court said:

"The state assumes to regulate the rates for transportation, and the character of the service rendered. Morally and legally it should protect the business of the established utility from impairment and encroachment. To do otherwise would soon create a situation where the public would be without transportation service. No capital could be obtained for an enterprise where no security was offered to the investor. Without capital there would be no transportation facilities, which, in this age, are indispensable to the transaction of business and the enjoyment of life."

In Illinois there have been two notable decisions by the Supreme Court of that state holding to much the same view. Maine and Maryland have also acted, through their commissions, to protect the established transportation systems. Courts and commissions are recognizing that the electric railways are as necessary to the communities as the water department or the fire department. Commissions are refusing to grant certificates of public necessity and convenience to petitioners who would duplicate electric railway service, and the public press is for the most part supporting them strongly.

The people have learned that freight trucking over highways is extremely damaging, not only to the highways but to the public purse, and this knowledge has brought about enactment of laws that will, when they have been perfected, put a proper share of the cost of maintaining public highways upon the vehicles that are most destructive to them.

It is also very interesting to note that the automotive industry is showing every desire to co-operate in bringing about co-ordination of electric railway and motor transportation. There was a time when the automotive industry seemed to think that the vehicles it produces could supplant the electric railways, but experience has shown them what it has shown the public as a whole, that the electric railways have a distinct field in handling mass transportation, that electric cars afford cheapest means of transportation of the masses, that such competition as trucks and buses attempt to give is ruinous, and that when buses are operated in public transportation the street railway company in each community is best equipped to operate them. So, today we find the automotive industry declaring with us that buses should be feeders or auxiliaries to electric railway service.

The United States Chamber of Commerce is at work upon a report on transportation, and through P. H. Gadsden, who is chairman of a subcommittee, the case of the electric railways is being adequately presented. I am sure that the report of the chamber will present the facts of transportation in this country in such completeness and so clearly that a long step will be taken toward the permanent stability of this all-important factor in human happiness and prosperity.

RAILWAYS USE BUSES IN THEIR PLACE

At our convention a year ago we adopted a report of the committee on trackless transportation in which was the following statement:

> We believe firmly that all of the transportation requirements of any community should be furnished by one agency and that that agency should be the electric railway company. It alone has the trained organization and ripe experience required for handling passenger transportation problems, and the development of any other agency for handling those problems would result in a duplication of service which could produce only a higher cost of transportation to the public. . . . Hence it is our duty as public servants, charged with the responsibility for conducting highway transportation in our respective communities, to study and consider the availability of every feasible unit or method of furnishing this service.

Since that report was adopted there has been a great increase in the number of electric railway companies operating buses in connection with their rail service. More than 100 electric railway companies, ranging in size from the largest to the smallest, have invested upward of $6,000,000 in buses, and hundreds of thousands of dollars in garages and service stations and equipment. Electric railways now are operating more than 1,000 buses. Two companies alone have invested more than a million dollars in buses during the last year.

Whether the bus transportation business is profitable at present is open to argument—in some places it is and in others it is not. Where buses can be operated in densely populated districts and where the hauls are short, they can be operated profitably at street car fares, but in general transportation they can serve the public only at a higher fare. Problems connected with proper design of bodies, proper apportionment of weight on axles, proper tires and other equipment, as well as accounting systems that will make it possible to determine the real cost of operating buses, have yet to be worked out.

The important fact, from the standpoint of the public, is that the electric railways are giving the people the kind of service they demand, and are giving it on regular schedules, regardless of weather, and at the lowest possible rates of fare. That they will continue this policy is assured. The public in most communities has come to understand that the street railway companies are making every effort to provide adequate service, and that they cannot do this unless a fair deal is accorded them by the people.

A FEW COMMENTS ON DETROIT

This better public understanding is being reflected in the matter of rates of fare. During the last few months there has been a decided change in the attitude of politicians and agitators, and a more favorable attitude by the press. It has been due to certain developments that have demonstrated beyond all doubt the close relation be-

tween costs and fares. Perhaps the most effective demonstration has been in Detroit, to which advocates of municipal ownership have pointed rather proudly until recently. The people there were promised "the 5-cent fare," extended service, the finest equipment and payment for the property out of earnings, by the municipal ownership advocates. "No more bond issues," was another promise.

Such promises are easily made, but not easy to live up to. Were it possible for a municipality to employ labor and buy materials at lower prices than privately owned companies must pay, demagogic promises might be kept. But one cannot escape facts, and the fact in the case of Detroit is that when it became necessary to increase the wages of employees of the Department of Street Railways those in charge of the railways could turn only to the car riders for the additional money, and they increased the fare to 6 cents, plus 1 cent for a transfer. They did right, but they did nothing different from what every privately owned property has had to do in similar circumstances. In a statement made by Mr. Steffens, former city comptroller of Detroit, printed in the Detroit *Free Press* of Aug. 25, this former city official, who by the way is a municipal ownership advocate, said that "an increase to 7 cents would have been the most business-like procedure," and forecasts are made that another fare increase cannot long be delayed.

The Detroit fare raise is at such variance with the announcement of "$1,000,000 profit in the first year of operation" that the people of that city must be wondering what became of the million. Those who are not acquainted with finance assume that a "profit" is money in the bank, or, at least, money available for use. In this case the rather insubstantial "profit" was invested or pledged before the public found out that the city had it, so that now the city turns to increased fares and to another bond issue to provide a semblance of the service promises made prior to the city's taking over the railways.

WHY A. E. R. A. OPPOSES PUBLIC OWNERSHIP

In this connection I think it is timely and proper to state again the attitude of the association toward public ownership. That we are opposed to it is common knowledge, but why we are opposed to it may not be understood by the public. Our opposition is not because we fear the loss of our property —the laws of this country protect all enterprises from confiscation without payment of the full value of the property taken. Our opposition is not due to fear of loss of profits, for some of the largest railways in the country have made no profits for several years —they are devoting all their energies to service of the public without one cent of return to the stockholders. Nor is our opposition due to fear that we may lose our jobs—whether railways are privately or publicly owned there must be trained, intelligent, progressive men to operate them.

Why, then, are we, and all other business organizations, opposed to public ownership? Because, gentlemen, it is foreign to and in conflict with the fundamental principles of the American government; because it is socialistic; because it is, in nine instances out of ten, wasteful, saturated with politics and inefficiency, and because, once it is established as a principle, it means the end of the representative form of government and the beginning of socialistic government. We all know what has come of experiments in pure democracy and socialism. I am sure I am safe in saying that the intelligent people of this country will not countenance the destruction of sound government. The problem before all who would preserve a prosperous, sane nation is to demonstrate to the unthinking the falsity of demagogues who advance the socialistic cause and the ruin that lies in adoption of their nostrums.

*Adding the Bus to Existing Facilities**

By L. S. Storrs

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New Haven, Conn.

L. S. Storrs

Independent Operation Would Result in Survival of the Fittest, to the Detriment of the Public—How the Two Agencies Should Be Co-ordinated Is Pointed Out

THE outstanding feature of this convention is the important place which the motor bus occupies. This is true not only in this meeting of the American Association and the exhibit halls but also in the meetings of the affiliated organizations. Last year a moderate exhibit was made of these facilities and some little attention was given to a discussion of the subject. The year before there were no exhibits of material interest, and the discussion of the matter was largely limited to executive session where the subject was hotly argued.

This is a natural progress. But a short time ago the motor advocates were urging that agency as the coming means of public transportation and pointing to an assumed analogy between the conditions confronting the horse cars of a short generation ago and the then newer method of propulsion, electric power, and what they claimed were the conditions of the present day between the electric car and the motor.

The essential difference between the two periods is the fact that great mass movements of people cannot be successfully conducted by the motor. A few practical demonstrations were sufficient to clear up any misconception there may have been in this line. Today we find the careful students of the transportation problem in practical agreement, that the two agencies must be co-ordinated.

Few, if any, electric railway executives will disagree with Mr. Reeves' fundamental principles that service must be co-ordinated and, in most instances, rendered by the traction utility, and that with independent operation the result would be merely the survival of the fittest, to the detriment of all concerned, the public most of all.

The problem is divided into the three classes into which the traction utility, itself, automatically falls: That of the metropolitan area, in which the main stem of the traction is the high-speed line, either subway or elevated, with distributing surface lines. The surface lines may or may not be operated by the general traction utility. The problem as to co-ordination is narrowed down to the question as to what is to the best interest of the numerous local centers as against what is of benefit to the metropolitan area as a whole.

The question of the suburban and interurban routes is entirely different from the urban problem. The highways that have been improved at the expense of the public have made possible great speed, which, coupled with the flexibility of the motor stage, has been the controlling element in the development of the competitive motor. Nor is this phase of the problem similar in different parts of the country. Climatic conditions and the relative level and open roads of the Pacific Coast make possible a form of stage operation entirely impossible in areas of more rigorous climate and hilly country.

In the cities throughout the land, the transportation problem is, necessarily, one in which the general benefit of the community as a whole must prevail, as against the particular interest of any individual or group.

It is as essential for the growth and continued development of the cities that the civic side of public transporta-

*Abstract of written discussion on co-ordination of electric railway and bus operation presented before the annual convention of the American Electric Railway Association, Atlantic City, N. J., Oct. 8-11, 1923.

tion should outweigh all others as that the city should be properly zoned and the various functions of the city group kept within proper territorial limits. For this reason the traction utility is most distinctly monopolistic in character. Any competition that tends to restrict the proper earning capacity of the general municipal transportation utility will render that utility incapable of performing its proper function. The utility management is the only one capable of unifying all transportation service in any city, to the ultimate advantage of the entire community. When charged with the obligation of adding to the existing rail facilities the mobile motor auxiliary, this group of experts certainly can do better work and accomplish more satisfactory results than any other.

In the ultimate analysis "public opinion" will dictate the method of operation and the means by which this desired co-ordination is to be accomplished. Public opinion is slow to recognize the actual economic principles of a utility problem.

Why Some Buses Can Charge Low Fares

The great factor that rendered possible the marked advance in urban motor transportation was the necessary increase in the rate charged for the service rendered by the electric railways. With the ability of the independent bus operator to confine his activity to the area of greatest density, the high factor of loading has enabled him, generally, to keep his rate lower than has been possible on the electric railways which must serve the entire community with a varying load factor. This, coupled with the natural public preference for the individual, as compared with corporate methods, has made it almost impossible to bring about a complete co-ordination of service in any community.

The prime essential of any plan to bring these two agencies into a common effort is recognition that this new medium, even if operated by an independent owner, is really but a single unit of many that are required to provide the transportation requirements of a community and as such must be operated where the service rendered is really necessary. Practically, the trouble with this is that the bus will then be in a part of the city which has not reached the maximum density of population, while the bus owner will prefer to operate in areas where he will obtain a constant heavy load, and where he can operate at a less rate of fare than the prevailing street car rates. The densely settled areas are always to be found along routes of public transportation which have been developed by the electric railways. Here, as always, the preference of the individual will be in conflict with the benefit of the community as a whole.

Another factor that works against the inauguration of a co-ordination of the two agencies is the reluctance of the railway executive to establish a service in an untried area, with the certainty that, once established, he must continue the service indefinitely, whereas the independent can abandon the operation if it is found to be unprofitable.

It is comparatively easy to imagine a city where the electric railway and bus operations are thoroughly co-ordinated, where the electric railway gives regular service over the rails laid as the city was growing in well defined residence, industrial and business areas, with the buses confined to areas that have grown up in recent years, and where the utility has not been able to expand due to lack of funds. But assume that in such a city the independent bus operator had been allowed to run in competition with the electric railway through the densely populated areas, unregulated and uncontrolled, and had taken so large an amount of the railway revenues that the utility rate had to be advanced above the bus rate in an effort to make the income cover the necessary outgo. What would be the public reaction to a proposal to co-ordinate the service, make the bus supplemental to the electric railway and thus give a unified service to the entire community?

Theoretically, this is the desired outcome, but I contend the matter is merely one for academic discussion up to the point that either one or the other facility faces bankruptcy, and of course it will be the utility with its obligations to render service throughout the entire city that would go.

How to Establish Co-ordination

This is all leading to the statement that the necessary preliminary to any effort to co-ordinate these two agencies is a public opinion that will support a legislation which recognizes that the two agencies are merely different means of providing a convenient and needed public transportation service which must be unified in order that the various communities may have a thoroughly efficient transportation service at the lowest possible rate.

In any state where the legislative acts have been changed to recognize this situation, it is a much easier task to accomplish a co-ordinated public transportation service. In such states there are places, outside of the city areas served by the transportation utility, where the independent operator should find sufficient inducement to provide service. The real co-ordination devolves upon the transportation utility, and a full measure of bus operation should be undertaken as rapidly as the need for service is apparent and funds available to provide the equipment.

Under all other conditions we can talk all we please about co-ordinating these facilities, but can accomplish nothing until the public opinion is of a temper to accept the needed regulation.

There is no question but that this competition which we have all had to contend with has provided a very valuable spur to all engaged in the transportation utility. Coming as it did at a time of advancing costs the drain caused upon our revenues by this competition made it all but impossible to continue operations free from receiverships. It has been necessary to put into effect so many economies that the entire theory and system of electric railway methods bears but little resemblance to those which were the common practice of a decade ago.

Gradually, but no less certainly, the transportation utility will adopt this newer form of vehicle for public service. Its actual place has as yet to be developed. There are, of course, many instances where its value is clearly apparent, but until each individual unit is operated so as to bring in the maximum revenue and perform a service of the greatest advantage to the public the true function of the motor bus will not be shown.

Co-ordination Defined

There is one question that must be answered. It is essential that the definition of this term "co-ordination" be thoroughly established so that there be no misunderstanding in the future. Do all parties have the same understanding as to what is to be co-ordinated? To all careful students of public transportation the idea of competition is repugnant. This method of diverting a portion of the public charge for transportation from the agency that is constantly endeavoring to render a satisfactory service at the lowest possible cost is merely the club wielded by the public itself in an effort to obtain from the transportation agency either a lower rate or a more convenient service than it is possible to render. In the long run the public, the community as a whole, will suffer. We cannot, therefore, contemplate any so-called co-ordination that would inject an intense competition between the electric car and the bus.

Operated as an auxiliary to the rail lines, the bus can perform a most useful function in the community. Its maximum value cannot, however, be determined until after a long period of actual use and careful experiment.

There are, of course, areas in many cities that have heretofore been without any convenient public transportation, in which even the independent bus operation has not ventured, which should receive bus service. In some instances, by an abandonment of a portion of a rail route, a more serviceable route can be established by motor. At certain periods of the day temporary bus routes entirely impossible by rail can be operated, to the great convenience of a portion of the population. A continuance of service, by bus, may be possible where the cost of changes or repair of unprofitable rail lines would otherwise necessitate the complete abandonment of all service.

The public cannot escape a very distinct benefit from the present attitude of both the executives of the transportation utility and the manufacturers of the motor vehicle in the mutual efforts to find a common ground for co-ordinating all means of transportation.

Coffin Prize Awarded to Chicago, North Shore & Milwaukee R.R.

Report of Charles A. Coffin Prize Committee Presented Here in Full, with Remarks of President Emmons and Response of Messrs. Budd and Homan

THE committee takes great pleasure in reporting on the conditions and circumstances surrounding the first award in the electric railway field of the gold medal offered by the Charles A. Coffin Foundation, established by the General Electric Company in honor of the many years of service to the electrical industry of its former great president.

It will be recalled that under the conditions of the foundation it is provided that an annual award of the Charles A. Coffin Medal will be made to that electric railway company in the United States which during the year has made the greatest contribution toward increasing the advantage of electric transportation for the convenience and well-being of the public and for the benefit of the industry. It is also specified that the company receiving the medal shall receive $1,000 for its employees' benefit or a similar fund.

Every electric railway company in the United States was invited to participate and urged to send to the committee a representation of its activities and accomplishments comprised within the field of the award.

This being the first year of the contest, it would seem that a larger number of entries were not received either because the time at the disposal of the companies was too limited for a thorough presentation of the results they had obtained, or else they have not, as yet, grasped the advantages accruing not only to themselves but to others in competing for the prize.

Before taking up the details of its work the committee desires to point out to the industry what a splendid service is to be accomplished by the annual award of this prize. The committee has made a detailed study of the merits of each claim presented in the contest this year and it has been greatly impressed with their contents. It feels that if nothing else were accomplished than to bring to light before the industry the detailed accomplishments of the various companies as set forth in their petitions the result of the Coffin Foundation would be of significant value. Those companies which have responded to the invitation to compete for the prize this year have done so with a very clear conception of the opportunity afforded and have put much thought and a great deal of labor on the preparation of their report. Of course, only one company can receive the prize, but all this work of the other contestants will not be lost, for in addition to the benefits they themselves have received from doing the work of which their statements speak, the ideas and information thus made available will be helpful to the entire industry, as it will be made available through the industry's publications.

CHARLES A. COFFIN MEDAL
FOR DISTINGUISHED CONTRIBUTION
TO THE DEVELOPMENT OF ELECTRIC
TRANSPORTATION FOR THE CONVEN
IENCE OF THE PUBLIC AND THE
BENEFIT OF THE INDUSTRY
AWARDED TO

The Charles A. Coffin Medal, Awarded for the First Time This Year.

But this is not the greatest thing accomplished by the Coffin Foundation prize. It establishes a means of giving recognition every year to that company which has made the most distinguished contribution to the development of electric railway transportation, and thereby serves to stimulate new initiative and increased endeavor toward the further development of this essential business.

For the contest this year the committee agreed upon and published eight points which would be considered the principal factors in making the award. It subsequently agreed upon the relative rating to be given each of these points in summing up the claims of the various companies. These are as follows:

1. The particular initiative, skill and enterprise manifested in popularizing electric railway service—more riders and more revenue.

2. Outstanding success in gaining public good will.

3. Economies which have been introduced in operation resulting from original ideas.

4. Economies in operation viewed as a measure of the extent to which the company has taken advantage of new developments in operating and maintenance practices and equipment originating with others.

5. Improvements in construction practice which have resulted in reduced first cost, reduced maintenance or greater reliability of service.

6. Particular success in conducting a safety program and actually reducing the number and seriousness of accidents,

7. Outstanding accomplishments in development of good relations between management and employees.

8. Special accomplishments, aside from good management, tending to reduce the cost of new capital.

Seventeen electric railway companies made submissions for the prize this year. Their statements range in size from a small brief to a large volume of matter, with numerous illustrations and various data. The committee had two meetings, with all members present, and spent considerable time in analyzing the statements and accompanying data.

As the study proceeded, it became evident that the railway represented by one of the members of the committee was one of the best three or four in the contest. This member of the committee thereafter retired from the deliberations.

In the final consideration, taking into account the relative standing of the several contestants on the basis of the weighted percentages given on the individual factors, the manner of presentation and the general importance of the subject matter of the report as a whole, there was no question as to the winner. There were two or three very

close contestants for first honor, but it was perfectly clear which one held leading place and this was unanimously agreed to by the members of the committee sitting, and by the two consulting engineers who had been requested to sit in at the proceedings.

From the representations of the winning company, the committee finds that on this property there has been carried to fruition most of the things that have been talked about for years as the remedies for various troubles. On this property the remedies have not only been talked about; they have been executed. Thus the winner stands out as a railway that has largely accomplished the tasks of gaining public good will, of merchandising transportation, modernizing service and equipment, improving the financial structure, and so on. There is no one great achievement on which the committee has based its award, but rather upon the accumulated results of a great many smaller accomplishments, although the committee was greatly impressed by the particular success of the company along the lines of gaining good will and selling its service.

Accomplishments of the Winner

As evidence of popularizing its service, the company shows that its revenue has increased 10 per cent in a year, its carload freight business has increased 40 per cent, its merchandise freight business has increased 50 per cent. New trains were added to connect with some of the fast trunk line trains and the running time between terminals, already fast, was reduced five minutes more. New types of equipment have been added and many detail improvements looking toward greater comfort of the passengers have been worked out. Motor buses have been extensively put into service as feeders for the railway. One-man cars have been purchased and placed in operation in services for which they were adapted. Extensive advertising in the form of posters, billboards, motion pictures and exhibits has helped materially.

Among the points cited contributing particularly to success in gaining public good will are the inauguration of a half-hour limited service between two important towns where the traffic hardly warranted this, immediate attention to complaints with reply to the person making the complaint, dinners to public officials, business associations and newspaper men when anything new is inaugurated, refund of unused tickets made within five days, freight overcharges refunded promptly, often in the absence of any claim. Above all is the general policy that economies are never made at the expense of the public.

The company is on the lookout for every possible economy as evidenced by the fact that a tour of the country was made during the year by a group of its men to find new ideas from other companies which might be applied to their property. Some of the particular economies that have been effected during the year include an important reduction in power consumption resulting from the coaching of motormen, use of lighter and more efficient car equipment, a study of the proper type of equipment for various classes of service and the balancing of motors and trailers in various classes of service; more scientific schedule making and elimination of stops, especially during the peak periods, and improvement in the average line voltage which permits more coasting. This endeavor to reduce energy consumption is facilitated by the use of meters on all passenger cars which give accurate records of the energy consumption per car-mile. Notable economies in the matter of accounting are also cited in the claims. A scheme was devised which saved 40 cents per 1,000 in printing tickets. Keeping stock records of tickets under a new plan saved 50 per cent of the time required. This also was responsible for saving the time of one traveling auditor, and 75 per cent of the time of ticket agents required in making reports. The substitution of a visible file for the ledger form of ticket records resulted in 10 per cent economy and gave more accurate results. A machine for analyzing ticket sales saved the time of one and one-third clerks. The use of billing machines in two merchandise dispatch stations saved four clerks and these machines are being installed in all stations now.

Construction methods which are contributing to the general success of this company include the placing of high-tension apparatus outside the buildings in the latest substations. All new alternating-current apparatus is of 60-cycle frequency in spite of the fact that all of the long-term power contracts were made for 25-cycle energy. A program of rock ballasting the entire system is 60 per cent completed. The old light rail is being replaced with 100-lb. rail. Concrete and brick platforms are replacing wood at the stations.

In fostering greater safety in operation, the company has succeeded in reducing injury and damage claims to 1.82 per cent of the gross. The record was one accident per 16,081 car-miles in 1922. The company's safety department is given the same status in operation as the other departments. Several community safety organizations have been formed through the influence of the company's safety department. In the schools 570 lectures were made to 22,500 pupils. During the present year 152 meetings of employees, groups and committees have been held and brought out 884 recommendations, of which 707 have been carried out, looking to greater safety. A "safety first" car goes over the property for meetings of the trackmen. First-aid drill teams have also been a notable part of the company's safety work, the membership of these teams being rotated so that all employees get the instruction.

In the work of developing good employee relations, the company has had particular success in paying one-half the tuition for extension courses, in providing classes in public speaking and in employing a prominent educator for a series of lectures on public utility operation. A most commendable piece of work has been the endeavor of the company to Americanize its foreign-born employees. This has been done through education and preparation for citizenship, good recreation, etc., and it has resulted in a very low turnover in labor. A forward step has also been made in providing very much better housing conditions for track employees. Other practices contributing to good employee relations have been a systematic plan of advice, together with plans and estimates for building houses, various social activities under the direction of a company club and the maintenance of a "placement" service, the duty of which is to find the job where a man will fit.

On the matter of "special accomplishments, aside from good management, tending to reduce the cost of new capital," the company cites the fact that it has reconstructed its financial structure to provide a flexible financing plan which also results in a material reduction in the cost of financing and makes possible a proper proportionment between bonds and stocks. The company is also having success in selling its stock to customers and employees.

From this very brief summary of the particular accomplishments set forth by the winning company as its claim for the honor of receiving the Coffin Medal, some idea may be had of the considerations which led the committee to its decision. The committee therefore now takes greatest pleasure in announcing that the Charles A. Coffin Gold Medal of 1923, for outstanding contributions to the art of electric railway transportation, is hereby awarded to the Chicago, North Shore & Milwaukee Railroad, Highwood, Ill.

The report was signed by James H. McGraw and C. D. Emmons, chairman.

Britton I. Budd, though a member of the committee, did not take part in the final decision, nor sign the report for reasons already given.

After reading the committee report, President Emmons called Britton I. Budd to the platform and said:

"It gives me great pleasure, Mr. Budd, to present to you the Charles A. Coffin Gold Medal for 1923. You have well earned this in the accomplishments of yourself and your organization in the operation of your great railway system. It is further a particularly happy circumstance that you are personally to receive this medal at a time when you are to assume the responsibilities of directing the destinies of the American Electric Railway Association for the coming year."

Mr. Emmons tendered the gold medal to Mr. Budd and also a certificate which he stated he knew Mr. Budd would be proud to hang up in his office.

In responding Mr. Budd stated that on behalf of his organization he wanted to express thanks for the recognition of whatever has been accomplished. He

stated that whatever had been done may be attributed to teamwork on the part of all—directors, officers and all employees. They have teamed as one in the common purpose of endeavoring to give service and win good will. They have done little that is unusual or original, he stated. Practically all the discussions of the great American Electric Railway Association have simply been taken advantage of and applied to the end of producing better and more popular service.

Mr. Emmons then called Louis Homan, supervisor of bridges and buildings of the North Shore Line and president of the Employees' Mutual Benefit Association, to the platform. Addressing him, Mr. Emmons said:

"The fact that your company has secured the award of the Coffin Foundation is proof positive that the greatest spirit of co-operation must have existed between all the men concerned in the operation of your railway system. I hope that you will carry back to your associates the congratulations of the American Electric Railway Association on their achievements as railroad men which have resulted in their attaining this award."

Mr. Homan thanked the association on behalf of the 1,500 employees of the North Shore Line and stated that the gift would be greatly appreciated and would stimulate the employees to greater effort to give good service, and in this way to carry out the idea of the donor, namely, to make electric railway service more popular.

*Industrial Relations on the Pennsylvania Railroad**

Elisha Lee

By Elisha Lee
Vice-President Eastern Region
Pennsylvania Railroad System

Employees Elect Representatives to Joint Committees, Which Have Jurisdiction Over Wages, Working Conditions and Discipline—The Plan Is Working Satisfactorily.

IT IS a pleasure to have the privilege of talking to you on the subject of industrial relations on the Pennsylvania Railroad. There is a community of interest between your industry and the steam railroads in many fundamental respects. Both are engaged in a necessary public service. For that reason, public policy as applied to both has for many years taken the form of regulation of a very special and frequently burdensome and restrictive nature. For the same reason also the regulations between employer and employees in both industries vitally concern the public itself and assume an importance that is peculiar to transportation as an industry altogether necessary to the life and prosperity of the people.

Before describing our plan and its operation in detail, I should like to say something that is perhaps of a general nature but which is nevertheless fundamental to a proper realization of what we are doing. Few questions have received as much public consideration in recent years as this so-called problem of industrial relations. We have had two President's conferences on the subject. The churches have taken it up through social service agencies whose commissions are actively engaged in studying its various phases. Other organizations have been contributing liberally to the discussion. We have whole books on labor terminology alone and a veritable mass of literature, reports, studies and investigations as to how employer and employee shall live together.

Unfortunately, too, there are many studying and writing and talking about the labor problem who seem to be unwilling or unable to see any middle ground between the national unionism of Mr. Gompers and the attitude of the employer who says in effect, "You cannot organize at all. I shall run my business as I please." Both are wrong. In this respect employee representation has been derided as an attempt to bust up the unions and to frustrate organization. On the Pennsylvania it is neither. Many of the employee representatives with whom our relations are most cordial and friendly are members and officers of some of the strongest labor unions in the United States. We are dealing with 100 per cent union committees representing the signalmen, and the men in engine and train service.

In any industry the personal interest of its workers is necessary to its efficient operation. It is the height of misguided folly for any man who calls himself a labor leader to encourage the thought that an employee's allegiance as a worker belongs to someone who stands over his employer with the weapon of the closed shop, the sympathetic strike and restriction of output. We have outgrown Prussianism in labor relations just as we have outgrown it in international relations.

It is our feeling on the Pennsylvania that we have found a way of solving this problem not only to the satisfaction of our officers and employees but to the satisfaction of the shippers, the farmers and the business men in the territory served by the Pennsylvania Railroad. Of course there has been criticism, some of it, as many of you know, from sources which should have given us the greatest encouragement. The answer to most of it, however, is obvious. There are 240,000 officers and employees on our railroad. You cannot humbug 240,000 intelligent men and get away with it.

Naturally skepticism met our proposals when we undertook to work out a plan of co-operation with our employees. Certain labor organizations falsely alleged that we were engaging in an anti-union crusade. Many of our employees, while not openly opposing the plan, had little faith in it and did not take it seriously. Today the vast majority are convinced, after the test of time has proved the worth of our plan, that this plan is on the level.

Some confusion, perhaps, was caused in the minds of many persons outside the railroad by the controversy between the Pennsylvania Railroad and the Labor Board, but I believe that it has now been dissipated to a large extent and that more and more the success of our joint efforts is becoming recognized and appreciated.

Basis of Plan

Essentially the Pennsylvania plan is very simple. We start out in the belief that both officers and employees are honest and sincere; that we are really friends and partners in the business; that we have the same stake in the success and prosperity of our railroad; that the real measure of our mutual success is satisfactory service, and that when reasonable men sit down around a table to talk over their differences in friendly fashion, they will come to a satisfactory understanding.

Our plan presupposes peace. It has been established to maintain peace. It is not an armed neutrality, nor does it embody a code of rules for carrying on a constant row. The success of our plan demands mutual trust. We get our facts straight and then we proceed to act on them in joint conferences at which we are all equals.

The first step in formulating the present plan of employee representation was taken with the representatives

*Abstract of a paper before the annual convention of the American Electric Railway Association, Atlantic City, N. J., Oct. 8-11, 1923.

of engine and train service employees on Dec. 29, 1920, when the "Memorandum of Understanding" with those employees was adopted, effective Jan. 1, 1921. This document provided for an orderly procedure for handling all controversial matters between the men of this service and the management. It provided for regular monthly meetings between the employees' committees and the superintendents, general superintendents and the four general managers.

But more important than this was the provision for a joint tribunal of men and management, known as the joint reviewing committee, with plenary power in the settlement of disputes referred to it. The decisions of this body, reached by a two-thirds vote of the individuals composing it, are, so far as the management is concerned, final and not subject to veto or appeal.

Following the issuance of Decision No. 119 of the United States Railroad Labor Board, providing for termination of the national agreements, agreements were made with all other classes of our employees covering this method of handling controversial matters.

As it was impossible to meet the employees individually or en masse, we asked them to vote by secret ballot for employee representatives on each division, in the shops, in the freight houses, and in all classes of the service. The only limitation placed upon them was that the representatives must be employees. Membership or nonmembership in any organization does not concern us. As a matter of fact the representatives selected in several classes are all union members and, as I have already pointed out, we have had for many years most cordial relations with our train and engine service representatives, all of whom are union members.

The structure of our plan is very simple. All the employees in a particular class and at stated times elect employee representatives. Local committees are formed on each division and in the shops. General committees are chosen to deal with the general superintendents and general managers. Meetings with division and general division superintendents and general managers are held at fixed times, so that there can be no delay or evasion in the consideration of disputed questions, or discussion of problems of the management and of the men.

The keystone of our whole plan is the joint committee for each class of employees, which is the highest authority on the railroad in the determination of any questions affecting wages, working conditions, discipline and discharge of employees. These committees are composed of an equal number of representatives of the employees and the management. Two-thirds vote is necessary to decide any question. If the committee cannot agree by at least two-thirds vote, the committee itself decides how the matter shall be settled. No executive officer of the company nor even the board of directors has veto power over the joint committee's decisions.

Since these committees have been working in the last two and a half years, only two cases have arisen on which the reviewing committee was unable to reach a settlement itself. One of these cases was referred to three arbitrators, one representing the employees, one the management and the third an outsider, chosen by those two. In the other case, a representative of the management and a representative of the employees were named to inquire into the facts. In both instances the findings were accepted by the reviewing committee and adopted as the basis of its own findings.

In this connection let me say, however, that our plan of employee representation does not start and stop with the settlement of grievances. That is only one phase of it. It is important, of course, in the current operation of the railroad, but there is another phase that is of much greater significance. I refer to what might be called the constructive side—the increasing interest of employees in the problems of management in helping to bring about greater efficiency and greater production, and in eliminating waste. It works in several ways.

In the first place, because machinery is provided for the prompt settlement of an employee's grievance, he can put all his mind on his work knowing that his case is going forward and that he will get a final decision in a reasonable length of time. He becomes a more contented and therefore a better workman.

In the second place, the representatives of the employees in their monthly meetings are getting closer to the management, getting a better understanding of what it means to operate a railroad, taking a broader interest in the everyday problems of operation and actually helping to solve them.

Critical Test of Method

It is possible to apply several critical tests of the methods which have been jointly worked out and agreed upon between our officers and employees—tests which no reasonable man can afford to ignore.

Is it fair to the employees themselves?

There is abundant evidence on that score. The results of the elections recently held for shop craft representatives, where more than 85 per cent of eligible employees voted, show how widespread and genuine is their satisfaction with the plan in both theory and practice. Our men have a more influential voice in determining matters affecting them than the employees of any other industry that I know about. Their wages and working conditions compare favorably with those on other railroads and in outside industries. As a matter-of-fact, the data about wages and cost of living in outside industries which is taken into account in determining wage schedules on our road is jointly collected, jointly compiled and jointly discussed and applied.

Every man has the same right of franchise in electing representatives. Employees and management have equal votes in reaching final decisions. Hearings of grievances are prompt, settlement is expeditious and certain, evasion on the part of either side is impossible, fair play is assured. Settlement of questions locally is becoming more general. Officers and employees have come closer together. They are seeing things as they look to the other fellow. We talk the same language.

Is it fair to the company?

I do not think it is necessary to argue the point that when men and management understand each other's problems, when they see and realize their mutual interest in the success of their joint enterprise and work whole-heartedly toward a common end, that enterprise itself is bound to progress.

Is it fair to the public?

The record is eloquent on this point. It goes back to the shopmen's strike of 1922 when two-thirds of the P.R.R. shopmen remained on the job and the company was enabled to handle more than its ordinary share of the country's business and serve the public without interruption while other railroads were seriously affected.

In addition, let me cite you briefly some of the accomplishments of the P.R.R. during the first eight months of this year. So much progress was made in the shops and on the road, in repairs and operations that long before Oct. 1, the goal of all the railroads of the country, the Pennsylvania Railroad had more than 87 per cent of its locomotives and 95 per cent of its freight cars in good repair, available for service.

Average carloads were increased, car movement was speeded up, carrying capacity of coal cars increased so that on Sept. 1 the improvement and betterment of service and facilities were equal to the addition of 50,000 new freight cars and about 550 new locomotives to our equipment.

At the same time this period saw the greatest volume of business in our history handled with a minimum of delay or inconvenience. From Jan. 1 to Sept. 22, the Pennsylvania Railroad handled about 20 per cent more loaded revenue freight cars than in the same period of 1922, 38 per cent more than in 1921, and 14 per cent more than in 1920, the previous record year.

Our plan may not be perfect and it may not fit other industries or railroads, but it is working and so far as we can find out is working successfully.

We do not feel that we have a finished product, or that we can now sit back and let things ride. Human nature is not built that way. The real test of what we are doing is sincerity and it is necessary in a large organization like ours, with its complex relations, to be everlastingly at it. Ours is a give and take proposition and lasting success requires that everyone right down the line, officers as well as employees, shall live up to the spirit of our relationship in all his dealings.

Essential Operating Costs*

By F. W. Doolittle
Vice-President North American Company, New York

Speaker Contends that Narrow Margin Between Receipts and Expenditures Does Not Allow Adequate Return on Investment—Average Fares Now One-Half Cent Too Low

F. W. Doolittle

THE extremely narrow margin between revenues and expenses has focused the attention of the electric railway industry on every item of expenditure. The records are full of instances in which the anemic dollar of the day has been helped to do the work of its more vigorous forerunner. Every month patience and skill devise new and improved methods.

After all these efforts to pit skill and genius against the problem of vanishing net, the operator must face the task of securing labor, materials, and capital in a highly competitive market where further economies are a matter not of what he can or would like to pay, but of what other lines of business can afford to pay. Nor are these the only items beyond the immediate control of the operator. There are taxes of various forms, and burdens imposed by the community as to standards of service and of equipment which, equitable or unequitable, add to the cost of the service.

What are the costs of service, and to what extent can they be lessened by changing the conditions under which service is rendered?

It is not my purpose to compare the costs in one city with those in another, hoping by such a comparison to disclose the methods of operation and management and the conditions likely to result in minimum costs. It would serve as well and be vastly easier merely to advise the industry to recruit its personnel in China, its capital in that country which the census shows to have the lowest interest rate, to pay its taxes in the islands of the sea, to purchase its power of Sir Adam, and to develop the density of traffic of the Interborough.

What we are here concerned with is rather an analysis of the types of expenditures made by the industry, with only such emphasis on their relative amount as is of use in measuring the effect of changed conditions on the cost of service.

Classification of Costs

The costs borne by electric railways may be classified briefly for this purpose as wages, materials, sundry services, contributions to cost of government, retirement insurance, cost of capital. Many factors combine to vary the relative amounts of these costs, the price level in the community served, the density of traffic and the burden of general and special taxes being of particular importance. A fair measure of the relative importance of the several classes of costs based on conditions obtaining for the industry as a whole is:

	Per Cent of Operating Revenue
Wages	41
Materials	14
Sundry services	7
Taxes, including imposts	10
Depreciation	8
Cost of capital	20

Depreciation and Cost of Capital

This last item, showing 20 per cent of operating revenue for costs of capital, means 6 per cent on an investment not more than three and one-third times annual revenues, and 7½ per cent only when the investment is two and two-thirds times annual revenues. The fact is that a ratio of $4 of investment to $1 of revenue is more common. These items are, of course, not all mutually exclusive. The item "Materials," for instance, includes a very substantial amount of wage; and probably half of the 10 per cent shown for taxes represents wages and materials expended in connection with the construction and maintenance of paving, the cleaning and policing of streets, the transportation of police and firemen, and other similar items included as a part of the general tax burden but not represented by specific tax levies.

Of the total cost, 28 per cent appears as depreciation and cost of capital. The industry is not now earning, and has not for many years, if ever, been earning the full measure of these costs. At the present time such figures as are available lead to the conclusion that about three-fourths of the amounts necessary properly to cover these items are being earned, i.e., the present average fare of about 7 cents provides only a little more than 2 per cent of the cost of the property for depreciation, and a little less than 6 per cent on the investment to cover the cost of capital. That is, the fare fails by at least half a cent to cover the full cost of the service.

Here and elsewhere in these remarks averages of costs and fares are used for illustrative purposes, and these averages probably fairly reflect existing conditions. Of course, the conclusion is not warranted that because the fares charged by a particular company are above the average its net earnings are also above the average. Costs of operation depend upon many factors and cannot be measured or compared on any single unit basis.

Depreciation and cost of capital are measured in terms of investment in this discussion. The actual figures show that about 2 per cent for depreciation and 5¾ per cent for return have been earned, and these percentages would, of course, be very substantially reduced if values were made to reflect present-day prices. It is not appropriate to interject at this time a discussion of the theories of valuation, but certainly it is of interest to note the distribution of its income made by electric railways when measured in terms of the average fare of 7 cents. Out of this wages absorb by far the largest single amount, being nearly three times as great as the cost of capital.

In order that all essential costs may be met a half cent should be added to the average 7-cent fare, as shown in the following summary:

	Cents
Wages	3.09
Materials	1.05
Sundry services	.53
Taxes, including imposts	.75
Depreciation	.60
Cost of capital	1.51
Total	7.53

Under the existing 7-cent fare the amounts available for depreciation and cost of capital are substantially less than true costs, amounting respectively to but 0.45 cent and 1.13 cents.

In the fall of 1920 labor and materials had increased 136 per cent and fares 42 per cent above these figures for 1913. A year later fares reached their maximum, with an increase of 49 per cent over pre-war levels, while labor and materials had declined somewhat, but still showed an increase twice as great as fares, standing at 99 per cent. At the present time the disparity is greater than it was two years ago—being 43 per cent for fares and 103 per cent for labor and materials.

Possibilities of Reducing Costs

It is of interest to consider the possibilities of lowering fares by reducing the cost of service. The average wage paid is now very close to 60 cents per hour, and is more than twice the rate paid in 1913.

If the street railway operators could persuade their employees to work for 30 cents an hour the cost of service could be reduced by 1½ cents per passenger. It requires no extended argument to prove the futility of such an attempt. Employees are recruited in the open market in competition with other industries. Wage scales generally average twice those in effect before the World War, and what is more, they have during the past year been increasing, not decreasing.

If we could go back immediately to pre-war prices paid for materials it

*Abstract of an address before the annual convention of the American Electric Railway Association, Atlantic City, N. J., Oct. 8-11, 1923.

would permit the fare to be reduced by but half a cent. Material prices, it is true, have declined a third from the high point of two and one-half times 1914 levels, but prices this past summer have averaged more than 10 per cent above those current two years ago.

The items of sundry services and taxes, amounting to 1¼ cents per fare, present not only the difficulties which would be experienced in attempting to reduce wages and the cost of materials to pre-war levels, but also the difficulty arising from the tendency of taxes to increase because of the widening spheres of governmental activity.

Treatment of Taxation

Taxation is in its very nature highly complex. The natural complexity of the problem has been increased by cross purposes and lack of scientific procedure on the part of those charged with the duty of spreading the tax burden. It has become impossible to distinguish the underlying principles, unless it be opportunism. It is perfectly apparent that the various branches of the government extend their activities, and as costs of all sorts increase the number of dollars which must be collected as taxes must increase in like proportion. The device of the indirect tax has undoubtedly contributed to a growth in governmental activities which never would have been tolerated had each individual been clearly aware of the amount which he himself was contributing. Whether or not the electric railways as a whole are required to pay into the public treasuries more than their just proportion of the public burden cannot be stated positively. Certainly it is the duty of the industry to its patrons to examine carefully into this question in order that it may resist being made a collector of excessive taxes and avoid passing on an improper burden to the users of its services.

The following facts are pertinent. Of the amount available to all the electric railways operating in one important state in the year 1909, for taxes and return on investment, one-eighth was paid in taxes levied directly and seven-eighths was available to cover the cost of capital. In 1921 one-third of the amount available went for taxes and two-thirds to return on capital. Actually during this period taxes more than doubled, while the amount available for return decreased. All of the other utilities in the state, including electric, gas, telephone, heating and water, taken together, paid 10 per cent of the amount available to the government as taxes in 1909. In 1921 they paid less than 19 per cent. It would appear that equalization within the public utility group is faulty if more than 32 per cent of the net of electric railways is taken in taxes and less than 19 per cent of the net of all other utilities.

In addition to these taxes directly levied, there are, of course, large amounts collected in the form of services, such as free transportation of police and firemen, paving construction and maintenance, and other items substantial in amount but difficult to value accurately. Taxes and imposts add at least three-quarters of a cent to the average fare. Their reduction or elimination is largely beyond the control of the industry, and recent experience indicates that no relief as to this burden on the car riders can be expected until they sense its injustice and act.

Those who place property at the disposal of others can, of course, do so without charge if they so desire, but if the property is to serve permanently and if capital for additional property is to be secured it is essential that the charge for service contain two components: one a return on the value of the property consistent with returns available in other enterprises in the highly competitive market for capital, and the other an amount which will permit units no longer useful to be retired. The basis of calculating this amount, usually referred to as depreciation, has been and still is the subject of much discussion. Without attempting to review the divergent opinions, one theory will be stated for the purpose of directing attention to a cost which may be essential under certain conditions. This theory holds that value as a basis for rates is investment; that amounts collected for retirement purposes and not disbursed to the owners in liquidation of investment are in effect prepaid accounts on the part of patrons and as such are entitled to receive interest credits operating either as additional revenues or lessened expenses.

Treatment of Depreciation

Those who grant the equity in theory of this procedure may still question it in practice on the ground that a property is never entirely renewed at one time, that consequently the reserve is never all drawn down, and the minimum balance is therefore an amount necessary only in theory, and in fact not an essential cost.

So long as the property remains in private ownership there is force in this contention. However, it is the undoubted right of the city, state and nation to acquire public utility property, whatever may be the advisability of such action, and acquisition, we may, expect will be made as cheaply as possible. There is sufficient precedent for deducting accrued depreciation in fixing the price to make it unsafe to ignore this possibility. If the purchase price is so fixed the owner will sustain a material loss unless there has been collected from the users of the service an amount equal to the amount the property is marked down, and he cannot protect himself by the claim that the property will never be entirely renewed at one time. For example, a property costing $50,000,000 may have lived 40 per cent of its useful life and be taken for the public at $30,000,000. If it has been estimated that the property will never be put in better than 85 per cent condition and that, therefore, the reserve accrued against retirement need never be within 15 per cent, or $7,500,000, of the accrued depreciation, there will be available to the owners to offset the mark down in price only $12,500,000 instead of the $20,000,000 necessary to make the investor whole. Unless those who advocate limiting the reserve to a sort of equalizing fund can guarantee that public acquisition will be on a basis consistent with the limited reserve such a hazard exists and protection against it is an essential cost.

Slowness of Turnover

Ten years ago the average ratio between investment and annual revenue was probably 5 to 1. Since then revenues have increased substantially though less rapidly than operating expenses, while investment has changed much more slowly. As a result the ratio of investment to annual revenues has declined, without, however, showing a similar change with respect to net earnings. In spite of the improvement in investment ratio the turnover of capital is still so much slower than in industry as a whole, and even than in other utilities as to sharply differentiate electric railways. For example, as shown by Bliss, twenty-four industries represented by ninety-four companies averaged, during the six years 1916 to 1921, an investment of only $1.16 per dollar of annual revenue. Four of these industries had annual revenues in excess of assets.

Because of the slow turnover in the electric railway business at least 40 per cent must be added to the other costs of operation to cover depreciation and cost of capital, an essential cost perhaps not readily appreciated by the users of the service whose business experience is along other lines. There is another aspect of this situation that should be referred to and that is the cost of money to electric railways as compared with the going rate in the open market. In common with other privately owned industry, electric railways have felt the severe and in many ways unfair competition of tax-exempt securities. In addition to this adverse factor the narrow margin between revenues and expenses has been reflected in the cost of capital. An electric railway receivership in any city in the country adds to the cost of service in every other city.

Relation of Traffic to Costs

In the transportation business a surprisingly large part of the costs go on from day to day without particular relation to the volume of traffic handled. An analysis of the expenditures of typical electric railways indicates that almost 50 per cent of their costs are independent of traffic. These statements refer, of course, to variations from the normal amount of traffic for which a property was constructed, and apply more particularly to decreases in the volume of traffic. A decrease in traffic of 20 per cent results in an increase in cost per passenger of 12½ per cent. Compare this with the bituminous coal industry, itself a business of large fixed costs, when a decrease in output of 20 per cent is accompanied by an increase in cost per ton of but 5 per cent.

Referring to the cost of approximately 7½ cents per passenger, of which, however, only about 7 cents is being collected, it is of particular interest to note that a 10 per cent decrease in the volume of traffic increases the cost per passenger nearly half a cent. In the period from August, 1920, which was by no means the peak of street railway business in this country, to August, 1921, there was a 10 per cent falling off in the volume of business handled by electric railways. Due to the very large percentage of fixed costs this decline in traffic alone produced approximately half a cent per passenger increase in costs. Other things being equal, an increase in business from the low point back to the 1920 level would be accompanied by a decline in the cost per passenger, but a further increase would be accompanied by relatively small further decrease in cost because of the necessary additions to plant to carry the increased business.

Is that part of the fare representing the increased cost due to lessened volume of business an essential operating cost? From the standpoint of the railways it is, of course, essential, but from the standpoint of the use of the service it is not, and can be avoided by discouraging competitive comers.

CONCLUSIONS

From this hasty survey of the essential costs of the electric railway industry the following conclusions may be drawn:

The electric railway is not now earning and has not for years, if ever, earned a return on the capital invested commensurate with the risks of the business and the opportunities in other lines. In 1913 the average fare was too low by 0.15 cent. It is now too low by 0.53 cent. If value is based on present prices failure to earn proper returns is and has been much greater.

Disregarding the present failure of fares to yield a proper return, the possibility of going back to the pre-war basis of the 5-cent fare is as remote, apparently, as is the possibility of returning to the $5 pair of shoes, the 5-cent cigar, or the 1-cent newspaper, and largely for the same reasons.

To cut 2 cents from the present fare would require that wages be reduced to an average of 20 cents an hour. If all materials and supplies cost nothing and if all taxes are remitted it would scarcely serve to cut 2 cents from the average fare. If nothing whatever were earned as a return on the investment it would still leave the average fare a trifle more than 6 cents. A larger volume of traffic would help substantially, but with the tendency of communities to divide their business, with the tendency of wages to increase, with stable prices for materials and a constant increase in the tax burdens, and with constant demands for increase in quality of service to be rendered for a single fare, the average company cannot for many years hope to make any substantial reduction in the rate of fare which should be charged.

*Co-ordination of Trolley and Bus in California**

By D. W. Pontius
Vice-President and General Manager
Pacific Electric Railway
Los Angeles, Cal.

D. W. Pontius

Material Progress Has Been Made Since the Paper Read Last Year—Agreements Have Been Reached in Several Municipalities, Keeping Railway in Control of Transportation Situation

IT WOULD seem pertinent that at this time I continue the subject of "Trackless Transportation" on which I addressed the association at Chicago last year, and supplement the remarks I made at that time with a review of the present situation, and relating the progress made in trackless transportation in southern California.

Last year the estimate was that there were 380 buses and trucks operated directly in competition with the Pacific Electric, with an annual operating revenue of approximately $3,325,000. At this time, a close estimate is that there are 396 competitive buses and trucks with an annual revenue of approximately $3,750,000.

The number of operating bus companies has not increased and, through constant vigilance and protesting of applications for permits before the State Railroad Commission, no new applications of a paralleling or competitive nature have been granted during the past two years.

The increase in bus and truck revenue of competitive lines is attributed to the continued phenomenal growth of southern California in population. Better to illustrate this growth, the population of Los Angeles in 1920 was 576,000; in 1921 was 611,000, in 1922 was 722,000 and in 1923 is 987,000.

In the city of Long Beach, where two bus companies with seventy-seven buses were operating on a 5-cent fare, the situation is unchanged and we cannot justly complain, as they are not permitted to parallel the Pacific Electric lines.

In Pasadena, a year ago, we were facing not only the problem of track renewals to cost in excess of $750,000, but had directly paralleling bus competition, with not enough traffic to justify two classes of transportation on the same streets. The railway company stood ready to make the necessary expenditures, but because of the political situation the city authorities felt that the people would not approve of ruling out the paralleling bus service over the same streets where car lines were operated.

The Chamber of Commerce of the city and one of the prominent newspapers backed the bond issue and the City Board of Directors, while another leading newspaper, and an organization of Pasadena business men, bitterly fought the bond issue and favored the railway company establishing bus lines to be operated in conjunction with the street car lines.

After many unsuccessful conferences with the City Board of Directors of Pasadena, the city discontinued negotiations with the railway company and called an election for a bond issue for the purpose of installing a municipal bus system, which resulted in a spirited contest at the polls. The result of the election was the defeat of the municipal bus project by an almost two-to-one vote.

Shortly after the election, negotiations were again resumed between the city and the railway company, resulting in a very satisfactory agreement. Paralleling bus competition within the city has been entirely eliminated. Under the agreement with the city, the established cash fare is 6 cents, or ten tickets may be purchased for 50 cents, good within the local limits of the city, with transfers to or from cars within the prescribed local limits. This is with the understanding that if, after one year, it is found that the local service in Pasadena is not paying its way, the railway company may submit the matter to the Railroad Commission for an increase in fares, and if the city so desires, at the end of one year, it may submit the matter to the Railroad Commission with a view of having the fares reduced.

The equipment and street car tracks in Pasadena have been rehabilitated, and all will soon be in absolutely first-class condition. On Los Robles Avenue, where it was necessary to rebuild the tracks at a cost of approximately $350,000, if the line was to be continued, street car service has been discontinued temporarily, and bus service has been installed. Indications are that the bus service will remain perma-

*Abstract of a paper before the annual convention of the American Electric Railway Association, Atlantic City, N. J., Oct. 8-11, 1923.

nently, as the travel on this line is not exceptionally heavy.

A very satisfactory street car service, augmented by bus service, is now being given, and everyone seems satisfied. At this time we are operating forty-five buses, and, with shops and garage headquarters, have a total investment in trackless transportation in the city of Pasadena of approximately $500,000.

In the Santa Monica Bay district, referred to last year, we offered to install supplemental bus service, but our offer was rejected by the City Commissioners; one commissioner favoring our plan and two opposing it. In that city a bus company was formed by some of the men who were individually operating local buses. The service rendered is anything but satisfactory to the people of that district, and the bus operators are not complying with their franchise requirements. It remains to be seen what the final solution of the transportation problem in that district will be.

Spirited Contest in Los Angeles

Probably the hardest battle ever sustained by electric transportation companies to retain their right to serve a city, to repel an alien interest, and to protect itself from unwarranted and unfair competition, was made in Los Angeles recently, culminating in an election wherein the people were to decide whether the existing railways—the Los Angeles Railway and the Pacific Electric Railway—were to be permitted adequately to serve their transportation needs, or a franchise was to be given the People's Motorbus Company to establish bus lines.

The bulwark of the People's Motorbus Company in its fight for place was the use of the names of William Gibbs McAdoo, of national political fame, and Marco H. Hellman, a local banker of known great wealth, in an effort to add substantial prestige and persuasive publicity to the venture.

The franchise for the bus line being applied for by referendum petition forced the city to call an election to determine the matter, notwithstanding that the railways made application for the operation of bus service in certain districts of Los Angeles eighteen months previously, on which applications the city had never acted.

The franchise applied for was directly to parallel the street car lines on the same streets, and skim off the cream of traffic, and not to develop any new territory. The result of the election was the defeat of the People's Motorbus Company franchise by over 12,000 votes out of 86,000 cast, despite the admitted expenditure of $125,000 by Messrs. McAdoo and Hellman and their associates in carrying on their part of the campaign.

Had the McAdoo-Hellman proposition come to a vote within a short time after it first was submitted to the people, every indication was that the vote would have been against the two railways. But a campaign of education was carried on through the newspapers. Pamphlets were distributed from house to house under the direction of an organization of business men of Los Angeles and the railway companies. Officers of the two railway companies appeared before clubs and civic organizations, not only alone, but in debate with the McAdoo-Hellman representatives. Mr. McAdoo himself took the platform. Before election day the voters were well posted on the situation and gave us the assurance that invested capital in the electric railways in Los Angeles was entitled to a square deal—and we got it.

A crosstown bus line on Western Avenue is now in operation, extending through a portion of Hollywood, on the north, and across the western portion of Los Angeles, to Slauson Avenue, on the south, a distance of 11 miles. A second bus line will be established within the next thirty days over Sunset Boulevard, Vermont Avenue and Eighth Street, between Hollywood and the business district of Los Angeles, a distance of 10 miles. A third line will be established over Vermont Avenue and Eighth Street between the northern part of Hollywood and the business district of Los Angeles, a distance of 6 miles. These three lines will require a total of approximately seventy buses.

The fare directly in the Hollywood district is 6 cents, while the through bus fare over the routes named is 10 cents, carrying with this fare the privilege of transferring to the street car lines or either the Pacific Electric Railway or the Los Angeles Railway.

My prediction is that within another year the Los Angeles and Pacific Electric Railways, through the Los Angeles Motorbus Company, will be operating in Los Angeles more than 100 buses, and will have an investment in trackless transportation in the city of more than $1,000,000.

In addition to the bus service installed in the city of Pasadena and in Los Angeles the Pacific Electric is now operating feeder or auxiliary bus lines, as a part of its railway system, in the cities of Santa Ana, Alhambra, Beverly Hills, Glendale, San Bernardino and Redlands, and within the next six months we shall have in operation fifty buses as feeders to our interurban system.

In a great many instances the bus lines are being operated at a slight loss, taking into consideration operating expenses, interest, depreciation and taxes; however, the loss should not be looked upon as a serious matter for the reason that the bus service has been installed to take care of the growing traffic in districts not served, instead of extending electric lines.

State Legislation

The last Legislature of the state of California not only passed many regulatory measures concerning bus lines, but adopted an entirely new method of licensing and taxing them. One of the most notable features was the elimination of the direct car tax upon a horsepower basis, substituting therefor a nominal license charge, and imposing a tax of 2 cents a gallon on gasoline, with a view to raising additional revenue for the road fund. It is estimated that the gasoline tax, which covers all automobiles, buses and trucks, will produce a revenue of $12,000,000 annually. This, added to the license fee of approximately $3,000,000, makes a total of $15,000,000, an increase over the previous year of approximately $6,000,000.

In the application of the new laws relative to trucks, a maximum weight has been fixed at 22,000 lb. The weight allowed in any specific case, however, is variable, depending upon whether machines are equipped with solid or pneumatic tires; solid tires being penalized by an additional charge and decrease of weight load. Another important feature is the regulation of truck speed, determined by weight of load and class of tire equipment. Buses and trucks operating in common-carrier service under the new law are required to pay to the state 4 per cent of their gross revenue.

Automobile common carriers and school buses are now required by law to stop at all grade crossings except within the limits of incorporated cities, and a number of other features beneficial to the railways and decidedly in public interest are embodied in the enactment.

The bill was bitterly contested before the Legislature by the motor bus representatives. The railways took the stand that reasonable regulation of buses and trucks operated in common-carrier service is desirable, and that the railways also operating buses were willing to pay the taxes the new law provided. While the bill is not all that could be desired, it is a long step in the right direction.

Railway Extensions

The management of the Pacific Electric still has confidence in the success of the electric railways. It will be only a short time until an expenditure of $4,500,000 will be under way, building a subway for taking interurban and suburban trains off the congested streets in Los Angeles.

During the past year only two rail line extensions of importance were made, one in the city of Long Beach and the other, known as the Alhambra-San Gabriel extension, in the San Gabriel Valley, which is destined to open up quite a large territory for subdivision and home extension, representing an expenditure of $288,000. Passenger and freight equipment has been purchased during the past year to the extent of $6,000,000, and a large portion has already been delivered.

I am pleased to say that the Pacific Electric has made a better showing during the past year than at any time since placed in operation and is now financially making its way.

Our relations with the public generally, throughout the territory served, are most cordial. During the past two years there has been a growing spirit of fairness toward the railways, and it is expected that by keeping faith with the public and making a sincere endeavor to serve adequately and treat

courteously our patrons, we will retain and enjoy their good will. Their attitude is best reflected in their actions at the polls in Pasadena and Los Angeles, at a time when the interests of the electric railways were being jeopardized.

The management of the Pacific Electric has confidence in the future and has definitely entered the motor bus field, or more properly speaking, the motor bus has been adopted as a factor in Pacific Electric Railway operation for use on auxiliary and feeder lines.

I do not concede that buses can take the place of the electric railways, but because of their adaptation as feeders and auxiliaries to main or trunk lines, they have proved their usefulness in connection with such transportation.

As I stated last year, the problem of the electric railways is not to put the buses and trucks out of business but to see that they are used in districts not adequately served by rail transportation. If the railways expect to hold the business in their territories they must either extend their lines or install supplemental bus service to take care of traffic requirements, or face destructive competition.

Buses are not practical for the handling of mass traffic, and the two electric railways operating in Los Angeles and vicinity are more needed today than at any time during the past.

*Industrial Standardization Urged**

By P. G. Agnew
Secretary
American Engineering Standards Committee

Much Progress Has Been Made by Co-operation of National Societies and the Industries Generally—International Co-operation Is the Next Step

P. G. Agnew

THE United States is justly regarded as the home of mass production and of interchangeable parts manufacture. The extensive development of standardization activities by engineering societies and by trade associations have taken place almost wholly within the last quarter century. At the present time there are literally hundreds of such organizations engaged in standardization activities in some form.

As examples there may be mentioned the extensive lists of specifications and dimensional standards of the American Electric Railway Association; the great group of purchase specifications and methods of testing for a large number of materials, which have been formulated by the American Society for Testing Materials; the dimensional standards for parts and supplies for automobiles, developed by the Society of Automotive Engineers; the large amount of dimensional standardization and specification work carried out by the railroads; and the standardization rules of the American Institute of Electrical Engineers.

In many cases, standards so developed have come into such general use as to make them essentially national in character. In far more numerous cases, such standards are receiving increasing recognition, but systematic co-operation and understandings with other interested bodies will be necessary to make possible full national recognition.

The American Engineering Standards Committee, whose organization came about as a result of the large number of bodies, technical, industrial, and governmental, doing industrial standardization work, is the agency through which such work in this country is passing from standardization by associations, societies, and governmental agencies to standardization on a national scale. Through its methods and procedure, which are the result of extensive study and discussion on the part of the numerous bodies concerned, and which have been further developed by four years of experience in active work, the standardization work of the many bodies concerned is being broadened and unified into national industrial standards.

From the first the work has grown steadily and rapidly. To one who has not been in close touch, the extent to which it has reached out into various industries and drawn in organizations, industrial, technical, and governmental, is astonishing. Work has been done on more than 150 standardization projects. Of these forty have been completed. More than 200 national organizations are participating in the various projects through their accredited representatives. These include more than 1,000 different individuals.

A systematic plan of co-operation has been adopted by which all organizations interested in any particular standardization project participate (1) in deciding whether the work shall be undertaken at all, (2) in formulating the standard, and (3) in bringing about its ultimate approval as an "American standard."

In one important particular the method of work of the committee differs from that of the foreign national standardizing bodies. When the committee was formed there were already a large number of organizations doing standardization work. This led to a policy of decentralization, each sectional committee being organized by and under the leadership of one or more of the principal bodies interested. Such bodies are known as "sponsors." This plan makes the committee the most decentralized of all the national standardizing bodies.

Approval of Existing Standards

For some time the unification of existing standards will necessarily form an important part of the committee's work. The rules of procedure provide that an existing standard "may be approved by the main committee, if, in its opinion, the standard has been developed by an organization and procedure substantially in conformity with these rules, or it has, by actual practice, proved its right to become a standard," without the standard having gone through the machinery of a sectional committee.

At one time the committee intended to withdraw the provision in this procedure providing for the approval of existing standards, but the development of the method of handling the approval of such standards, and further experience with it has shown it to be a valuable and flexible method of bringing about national agreements on standards. Hence it is now planned to continue the provision indefinitely.

An organization like the American Electric Railway Association may have many relations to the work of the American Engineering Standards Committee—as a co-operating body, with representation on sectional committees; as a sponsor; as a body submitting existing standards for approval; and as a member body having direct representation on the main committee.

Sustaining Membership

I have often been asked as to methods of financing the work of the American Engineering Standards Committee. A plan of permanent financing has been worked out through sustaining memberships. Industrial concerns are being asked to subscribe directly. The schedule of subscriptions recommended is on a basis of approximately 1 cent per $1,000 of annual gross receipts. More than 200 sustaining members have now been enrolled.

It is already apparent that such sustaining memberships are going to play a very important rôle in the actual work itself, since they provide a direct channel through which the firms in-

*Abstract of a paper before the annual convention of the American Electric Railway Engineering Association, Atlantic City, N. J., Oct. 8-11, 1923.

terested in standardization work may be kept in direct and intimate contact with the standardization work which concerns them.

Relation to the Government

Few people who are not in immediate contact with the standardization activities of the federal government have an adequate realization of how extensive these activities are. Nearly all of the ten regular departments and the various independent establishments are doing more or less standardization work which directly or indirectly affects the industries generally. This falls into two general categories: first, that carried on chiefly in the form of specifications by the purchasing agencies of the government; and second, that carried on by the research and investigational bureaus. Such research agencies as the Bureau of Standards, Bureau of Mines, Bureau of Public Roads and the Forest Service are carrying out much important research work, the results of which are of great value to the industries concerned, and many of them have an intimate bearing upon problems of industrial standardization. These bureaus cooperate effectively with trade associations and national engineering societies engaged in the various special fields of engineering and industrial standardization, and they are now actively participating in the extensive program of standardization work going forward under the auspices and procedure of the American Engineering Standards Committee.

The federal government is one of the largest purchasers of industrial products, both as to the amount and the range of supplies which it requires. One of the early acts of the first Director of the Budget was the organization of the Federal Specifications Board, composed of representatives of the various purchasing agencies of the federal government under the chairmanship of the director of the Bureau of Standards. Its purpose is to unify government specifications and to bring them into line with the best commercial practice. Government specifications are being submitted to the A.E.S.C. for criticism and to determine their acceptability to industry. The Federal Specifications Board, together with the Bureau of Standards, maintains a liaison representative for cooperative work with the A.E.S.C.

The division of simplified practice of the Department of Commerce concentrates its work upon the elimination of unnecessary lines, types, and sizes of manufactured products, particularly in those situations in which decisions must be made upon a non-technical basis.

A.E.R.A.'s Relation to the Movement

The A.E.R.A. is represented on the main committee by the chairman of its standards committee, Martin Schreiber. From the first, the association has taken an active interest in the work of the A.E.S.C., and is co-operating extensively in a large number of projects.

Naturally much less has yet been accomplished in international industrial standardization than in national work. Yet beginnings have been made in several fields and in some lines substantial progress has been made.

From the very nature of industrial standardization it should be evident that there must be a full, mutual understanding and appreciation of the problems and point of view of the various parties at interest. This is true regardless of the scale upon which standardization in any particular project is carried out. The secretaries of the national standardizing bodies made the question of interchange of information a principal consideration in their conference in London two years ago, and again in Switzerland this summer. Information on the status of all projects before the national bodies is regularly and automatically interchanged among all of the national bodies, and the way has been paved for a very extensive interchange of information on a project at all stages of progress in its development.

It seems to me that the problems now confronting many of the national standardization movements are much the same as those that surrounded the movements toward trade associations in this country a few years ago, while international standardization will follow in much the same way, but without going so far or so rapidly. Whatever the ultimate outcome may be, it seems to me that the next step in any case is the same—to develop as full and as free an interchange of information as conditions will permit.

*Maintenance of Men**

By Hart E. Fisher, M. D.
Chief Surgeon
Chicago Elevated Railroads

Hart E. Fisher

Care Should Be Used in Selection of Employees to Eliminate Defectives—In This Way Accidents that Are Due to Man-Failure Can Be Lessened Materially

IN ANY public utility company will be found departments organized to carry on the different functions of the business. In railroad companies the transportation department is in charge of the operation of trains and service directly to the traveling public; the electrical department has supervision over all things electrical, pertaining to transportation; the maintenance of way department, supervise the construction and maintenance of tracks, roadway and buildings. There should also be a department for the maintenance of men—in charge of all activities having to do with the health of employees in their relation to the industry. Not every railway line should have a medical department with the various branches of its work, as this would be impractical from an economic standpoint; but there is no road so small but that it can well afford to adopt a regular medical policy.

This maintenance of men is incorporated in the Chicago Elevated Railroads in the work of the medical department. The management believes, and experience has proved, that the real work of a medical department is along the line of prevention; that the company should do all that is humanly possible to correct conditions so that environment of employees is sanitary and healthful; to adopt appliances and practices that will prevent injury to employees or passengers, as well as to select those employees who are physically and mentally fit for the duty of transporting the public, and after employment, to maintain these workmen in a healthy condition.

Causes of accidents and inefficiency on the part of employees are prevented by careful physical examination of all new men and frequent re-examination of old employees at regular intervals, as experience and conditions warrant. Also examine all employees after any unusual occurrence or accident, to determine if any physical or mental condition exists which might have been the cause of such accident.

Physical Illness or Defects

Defective vision, undetected, is a direct cause of accident in a great number of cases. A person with defective vision—near or far—is a poor judge of distance, and slow at what is known as accommodation. For that reason he does not see the source of danger as readily as the man with perfect vision. Frequently, when a man is told that he has defective vision, he replies that he can see as well as you or I. That may be a fact as far as

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the man is concerned because his defect has come on gradually, but nevertheless he is under a constant strain and it is only a qustion of time before the sight becomes more impaired and an accident occurs. This eyestrain is also the cause of incivility on the part of trainmen to passengers, as the eyestrain causes a nervous tension, and, if headache is present, you will have an irritable person to deal with.

Sometimes an injury, trifling in itself to the normal eye, will result disastrously to an eye that has defective vision.

Stereoscopic or double vision is a direct cause of accident. Astigmatism, with the accompanying sudden fogging of vision, both partial or incomplete in one or both eyes for a short period of time, will occur just when normal sight is most needed. Eyestrain is often conducive to dizzy spells at a time when one needs normal equilibrium, and the sufferer is himself injured or causes injury to a passenger.

The remedy for defective vision is properly fitting glasses to relieve the nervous strain and correct the error of refraction. However, glasses often are, in themselves, a source of danger. They may be left at home, lost, or broken and the employee who goes to his work without them runs the risk of having an accident because he is not accustomed to working without glasses. Very often the lenses fog from the cold or from perspiration, partly obscuring the vision and the man is hurt. Even soiled or smeared lenses are causes of injury. One of the greatest risks is that of the glasses being broken and a piece injuring the eye when the object which struck the glass could not have struck the eye itself. Colored or tinted glasses are taboo, especially in train service, where they may cause a change in the man's ability to distinguish signals.

Any man who is color blind has no place in railroad or marine work if he is to handle the public safely and competently operate trains or train signals. Those colors most often confused by the color blind are unfortunately the very ones that designate train signals—red, danger; green, clear. Some color-blind men work, apparently with safety, when no examination is made. They watch the switch points when they see a signal color or the signal arm, and if two lights are used they know which is the red and which green by the way it is lighted—top red and bottom green, or vice versa. It is essential that more than one color test be made, and be sure that your doctor is not color blind himself. Do not take for granted that having once tested an employee for color blindness and found his sight normal that he will always remain so. I have, personally, found four cases developing in motormen who had previously passed many tests as normal. Disease had been the cause of the defective color sense developing and was detected in the regular reexamination of employees.

Defective hearing is a frequent cause of accident. It comes on gradually. The deaf one finally has an accident because he did not properly understand orders, or in his effort to hear, he became confused and accident resulted. Some people who believe they are becoming deaf, after removal of impacted ear wax, find that they hear perfectly. Deaf people are prone to become irritable due to their defect and act impulsively, thereby causing accident. Defect in hearing is often the source of complaint by passengers of incivility on the part of an employee by reason of his speaking too loud, not paying attention when addressed, or because he gives wrong information due to not having heard the question correctly.

Some deaf people operate trains with apparent safety by watching the hammer of the signal bell, looking out to see that all is clear before starting, etc., where no examination is made. Placing of an employee who is deaf on the witness stand, in litigation, makes a very unfavorable impression on the jury. There are a great many people with defective sight, color blindness, and deafness driving automobiles who are the cause of accidents.

Very often an employee who has an accident remarks that he cannot remember what happened. He is correct or he undoubtedly had a fainting spell, heart failure (syncope), and of course he cannot recall the details of his accident. Examine these cases and see if the heart is not the offender rather than the employee's carelessness. Defective hearts are also the cause of absenteeism from work. Employees should be carefully examined for heart conditions after such illness as rheumatism, infection, and contagious diseases.

A man may have a sudden weak spell due to his defective heart, exaggerated by indigestion due to overeating just prior to going on duty, and the temporary loss of his full faculties results in an accident. There is no place for sentiment when a motorman is found to have a defective heart, and you will have to play absolutely safe here.

Neglected teeth are responsible for a large amount of the rheumatism and so-called stomach trouble. If we urge upon employees the great benefit to be derived from caring properly for the teeth, the rate of absenteeism can be greatly reduced.

An employee with hernia or rupture is liable to be overcome by a sudden weak spell or pain in the groin or back, causative of injury. If you question a man who has dropped some object on his feet or suddenly let loose of something with disastrous results, he will very often say that he had a pain or felt weak and let go. Examine him for rupture. If these cases have trusses on, they are handicapped by the truss, which often slips on exertion and is the cause of injury. Operate on all hernias in young or middle-aged men, and, when they are found in old men, place the man on a job where muscular effort is not necessary. Symptoms of hernia direct a man's attention from his work. An unsupported hernia is liable to strangulate and cause the death of the patient.

Trainmen, because of the nature of their work, are obliged to be on their feet for long periods of time, and if they have varicose veins or flat feet they very quickly become fatigued, less agile, and mentally irritable to passengers and may cause injury to a passenger by reason of having their minds diverted from their work.

It is said that with old age one also becomes cross, crabby, neglectful. If examination is made of these employees you will find, no doubt, that they are suffering from some illness which is undetected or of which the patient knows but keeps from his company. Ofttimes an old employee is found going to sleep on duty—examination may show that he has Bright's disease, diabetes, or some illness which causes a temporary drowsiness to come on over which he has no control. This is frequently the explanation of accidents or collisions when the motorman or engineer has a clear view ahead, as well as for running past stations or meeting points. Employees must have the full use of legs, arms, and fingers properly to protect themselves from injury.

Mental Causes of Accidents

Observation of an employee gives a clew to his mental or physical defects, which, undetected, may lead to accident. A neat, clean man is often a safe and healthful man, while the slovenly, careless person is very liable to be an inefficient and unsafe worker, as well as an unhealthful individual. The nervous, excitable man because of his quick, impulsive manner of doing things is frequently the direct cause of accident either to himself or to a passenger; more often, probably, he gives rise to many complaints from passengers on account of his actions. The loud, boisterous fellow is conducive to accident and offensiveness to passengers. Courtesy cannot be expected from the boisterous, loud chap because he knows no such thing as courtesy.

The worried, troubled, or agitated state of mind is the cause of innumerable accidents in industry today. Worry over financial matters, grief over family illness or death, anger or strife in the home or at work, hatred, malice, or envy of one's fellowmen are all conducive to accident. When a man is angry and in a temper, he acts impulsively, taking chances and doing things which he would never think of doing in a peaceful frame of mind.

If the work at hand calls for constant repetition, the man assigned to that task should not be of a nervous or temperamental type. There is also the fixed mind such as that one which minimizes all rules, work, or anything coming from the employer. The radical is in this class. So is the old employee who has been in the habit of doing a thing his way and will not be told how to do it in a better or safer manner.

One of the greatest factors in accidents is fatigue of mental faculties on account of the routine nature of the work. A man listening to the constant click-click of the wheels passing over the fish plates is soon lulled into a drowsy state of mind and his faculties

become clouded. Although apparently in full possession of his senses, he fails to apply his brakes in time and an accident occurs.

You can overcome this fatigue due to routine, monotonous work by having the employee change his work or rest at certain periods. For example, have motormen stand up when they approach stations, meeting points, junctions, etc.

*Reviews of Report of Committee on Bus Operation**

By H. W. Alden

President
Society of Automotive Engineers
New York City

H. W. Alden

Co-operation of Electric Railway and Automotive Interests Is Essential to Proper Development of Transportation —The Bus Is Here to Stay and Should Be Incorporated in the General Transportation Scheme

IT IS not too early for the designer and builder of motor buses to get together with the user. Only by sincere and hearty co-operation can satisfactory progress be made. Plain speaking on both sides, if of a constructive nature, is to be welcomed by both sides. I feel that at this, our first official appearance with you, we should not be too argumentative. It is of far more importance that we both get together as we are doing now.

Your committee is to be congratulated on the breadth and scope of its investigations. It should furnish an excellent foundation for future endeavors. Judging from the phenomenal growth of bus transportation, both in city and intercity work, it is very evident that the motor bus fills a certain need in the life of the nation. Here it may be overdone. Here it will be foolishly handled. Out of it all, however, will gradually emerge a new form of passenger transportation, giving a service which the street railway never can give. In the last analysis, however, it will remain only when and where it can make money for the operator. This is the final test—it must be a revenue producer.

In getting together by very limited discussion, I wish to give credit for great assistance in preparing these notes to the publishers of *Bus Transportation,* Colonel Green of the Yellow Coach Company and to Mr. Horner of the General Motors Corporation. Your attention is also directed to a paper by W. P. Kennedy before the metropolitan section of the S. A. E., on the subject of trolley buses, and to the discussion of this paper. In both there is a great deal of valuable information.

Proceeding now to the report proper, the first thing that struck me was that the companies investigated were all street railway companies. I can readily understand that to carry on a complete investigation covering the operation of outside or independent bus lines might have been quite difficult and might have been contrary to the policy of the association. It would seem, however, that the figures presented by the report would have been somewhat different if independent companies had been included, because a great many bus companies are making money.

The general summary of the results reported by your twelve companies investigated shows a net loss. We should not jump at the conclusion that this is a chronic and expected condition. Your report, however, does show that four out of the twelve companies had a revenue in excess of expense. Two of the twelve had such ridiculously low revenues that it would seem that they had tried to operate under impossible conditions.

It would appear to us that your association ought to extend its official investigations to independent companies. It is realized, of course, that the conditions under which many of the independent companies operate are free from some of the handicaps that the street railway companies are saddled with. On the other hand, the street railways have always been firm believers in trying to get a clear picture of what the other fellow is doing and making it a matter of permanent record.

Furthermore, the investigation covers only single-deck buses. Now there are many places where a double-deck bus is to be desired, as evidenced by its success in London, New York City, Chicago and Detroit, in all of which cities the revenues exceed expenditures by a comfortable margin.

It is gratifying to us motor people, however, that in spite of the rather gloomy picture painted, the consensus of opinion among your operators seems to be that the motor bus is here to stay. The early years, so to speak, are, however, painful. They appear to be so in this case. However, I am informed that in 1921 composite results of fifty-two city railways showed 46.5 cents a mile revenue and 45.7 cents a mile expense. This is not a particularly rosy picture either.

Sound and Economical Reasons for Using the Bus

In analyzing the reasons cited by your companies' investigators as to why motor bus transportation was undertaken considerable light is thrown on the subject. These can be roughly classified as follows: (a) To meet competition; (b) to give better service; (c) to fulfill an obligation resting upon the transportation system which has the monopoly of transportation; (d) to feed new territory at a minimum investment and expense.

These are all very sound and economic reasons. I venture to suggest, however, that in some cases, at least, the proper equipment was not chosen. Too much care cannot be given to this

*Abstract of a contribution to the discussion on bus operation before the annual convention of the American Electric Railway Transportation & Traffic Association, Atlantic City, N. J., Oct. 8-11, 1923.

COMPARATIVE STATEMENT OF MAINTENANCE COST PER 1,000 CAR-MILES FOR CARS AND EQUIPMENT OF CITIES N

Account	Atlanta				Memphis				Birmingham				Little Rock			
	July, 1923	Year to Date, 1923	July, 1922	Year to Date, 1922	July, 1923	Year to Date, 1923	July, 1922	Year to Date, 1922	July, 1923	Year to Date, 1923	July, 1922	Year to Date, 1922	July, 1923	Year to Date, 1923	July, 1922	t
Superintendent of Equipment	.848	.863	.875	.931	.86	.81	.86	.87	1.7	1.5	1.6	1.7	1.82	1.96	1.72	
Passenger and Combination Cars	8.802	10.498	9.586	10.136	13.75	14.37	14.36	14.43	10.5	12.8	17.00	15.70	11.77	12.78	13.83	
Freight and Express Cars	.45	.008	.005	.012	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Service Equipment	.138	.265	.222	.202	.96	.47	.37	.23	.1	.4	.6	.3	.15	.14	.08	
Electrical Equipment of Cars	5.812	5.123	4.997	6.047	5.82	4.89	5.47	5.42	7.1	6.9	8.4	8.3	6.97	8.94	6.34	
Shop Equipment and Tools	0.48	0.46	.102	.102	.13	.20	.08	.13	.2	.2	.1	.2	.14	.29	.53	
Shop Expenses	1.494	1.133	.715	.866	.83	.99	.87	1.03	1.2	1.2	1.3	1.2	1.42	1.35	1.42	
Miscellaneous Equipment	0.56	.119	.042	.079	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Total Maintenance	7.245	18.055	16.545	18.377	22.35	21.73	21.31	22.11	20.7	23.1	29.00	27.6	22.28	25.46	23.93	
Renewals and Replacements, Mechanical Department Only, 1922	No record				$11,409.27				$58,915.46				None			

point. Differences in types of vehicle may easily be the difference between red and black figures at the end of the year.

Proper routing is another important element, probably not any too well understood as yet.

The speed of operations is a very important factor not very thoroughly covered in the report. A change in motor cars, gear reduction, etc., which would raise the average speed of a city bus even so much as 10 per cent might also change a loss to profit.

Little appears in the report on special forms of equipment for special services which may, when properly catered to, mean the difference between a deficit and a surplus. The motor bus is excellently adapted to give express service, which is something that even double-track street railways cannot give. The double-deck bus, furthermore, creates a traffic of its own and people delight in the upper-deck comfort. I mention these points simply to bring out the fact that when all of these features of motor bus transportation are studied and their revenue-producing capacity made available the net operating financial results might be quite considerably altered.

We have found in Detroit that twenty-five-passenger one-man buses can be operated with very much less money per mile than even the small one-man street cars, and are going to be very considerably used for outlying territory, operated in conjunction with the railway department for the city.

I had expected a complaint from your committee that much of the equipment that the members of your association had been compelled to buy was little more than built-over commercial cars and chassis. The motor bus builder is open to criticism, in nearly all cases, in trying to do just this thing. Some of the companies, of course, have recently made up and developed special equipment. Bus service demands special equipment from end to end, designed primarily for bus service, because conditions and requirements are totally different from those resulting in merchandise transportation.

On the subject of depreciation there is a wide variation in your practice. Surely these figures might be brought more nearly uniform. On the whole, it seems as if the figures taken are unnecessarily high. Given the right equipment; that is, one which will not soon become obsolete, a ten-year life is not unreasonable, when the vehicles are operated under good maintenance practice. Their table gives depreciation as about 13 per cent of the total expense on the average. This seems high. Of course, in the early days of any project it is wise to err on the safe side, but it would seem that there were enough well established data, as evidenced by the London General Omnibus and the Fifth Avenue Coach Company, to indicate 7 or 8 per cent as being an adequate depreciation. I note that your committee advises its members to study carefully the practice governing depreciation. This is very timely advice.

It is very gratifying to see the earnest purpose of your association to take up this new instrument, which our industry has produced, and to give it a fair trial. We know that we are just beginning to understand the problems to be met. We pretty generally appreciate now the necessity of quite special equipment. Working with you, we can more and more meet your requirements. On the other hand, you will have to give these new things a fair chance to see what can be accomplished with bus operation, as you have in most cases done with the idea of making it financially successful. The motor bus has many fundamental characteristics that make it excellently adapted to fill a public need and ought to enlarge your field of operation, enable you to hold business you otherwise would lose and, properly combined with your railway operation, it should lead to ultimate economy and operation of the entire system.

*Mechanical Men's Association Improves Maintenance**

By A. D. McWhorter
General Superintendent
Memphis Street Railway

A. D. McWhorter

How the Southern Properties Have Combined to Exchange Monthly Reports and Information—As a Result Maintenance of Equipment Figures Are Tending Downward

REALIZING that the individual can measure his standard of efficiency only by comparison, the Electric Railway Association of Mechanical Men, Southern Properties, embracing Birmingham, Nashville, Little Rock, Dallas, New Orleans, Mobile, Atlanta and Memphis, was organized in Memphis, Tenn., in April, 1922. The object of this association was to create friendly competition and increase the efficiency of the mechanical men and the mechanical departments by comparing monthly operating results of the various companies.

Previous to the organization of the association, several of the properties had been exchanging monthly reports on car pull-ins and average miles per pull-in. These reports are still being exchanged and, in addition, we are exchanging reports showing the total maintenance cost of equipment, subdivided as to the various accounts, also a statement showing cost of inspection and car cleaning. These reports are posted in the shops of the various companies and the rank and file of all the organizations are kept posted and know how they compare with the other member companies.

Each member sends his report to Memphis as early after the first of each month as is possible. A standard form of classification is used by all members.

*Abstract of a paper before the annual convention of the American Electric Railway Engineering Association, Atlantic City, N. J., Oct. 8-11, 1923.

ONTH OF JULY, 1923, AND FOR YEAR TO DATE COMPARED WITH SAME PERIOD OF PREVIOUS YEAR

Dallas				Mobile				New Orleans				Knoxville				
	Year, to Date, 1923	July, 1922	Year, to Date, 1922	July, 1923	Year, to Date, 1923	July, 1922	Year, to Date, 1922	July, 1923	Year, to Date, 1923	July, 1922	Year, to Date, 1922	July, 1923	Year, to Date, 1923	July, 1922	Year, to Date 1922	Account
57	.765	.63	.69	1.52	1.85	1.72	1.95	3.02	2.80	2.49	2.17	1.02	1.84	1.7	1.8	Superintendent of Equipment
06	13.604	13.29	15.39	18.50	17.80	19.00	23.10	14.68	16.25	29.17	31.30	10.30	19.55	30.5	23.2	Passenger and Combination Cars
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Freight and Express Cars
35	.469	.63	.21	.58	.40	1.14	.40	1.20	.99	.90	.68	.05	.25	.8	.8	Service Equipment
37	7.813	7.96	7.21	4.30	4.80	5.60	5.00	10.81	11.56	17.34	15.79	7.10	11.80	12.3	12.7	Electrical Equipment of Cars
76	.296	.21	.38	1.65	1.92	1.75	2.20	.42	.42	1.05	.94	.06	.18	.6	.5	Shop Equipment and Tools
	1.729	1.70	1.60	.....	.....	.....	.....	.99	.98	1.00	.93	.20	.68	.5	.8	Shop Expenses
02	1.095	.53	.50	.05	.30	.05	.29	.74	.90	1.22	1.29	.05	1.68	2.7	2.8	Miscellaneous Equipment
55	25.771	24.95	25.98	26.60	27.10	29.40	33.30	31.86	33.90	53.17	53.10	18.74	36.09	49.1	42.6	Total Maintenance
	$193,496.01			No record				$471,433.96				$85,735.82 All Depts.				Renewals and Replacements, Mechanical Department Only, 1922

When these reports are received, we prepare a statement, compiling figures covering all cities, showing the monthly operation and yearly figures to date. A copy is sent to each member about the tenth of each month.

The results obtained, as shown in the accompanying tables, have been most gratifying to both the mechanical men and the management of the various properties. The maintenance of equipment figures are tending downward, so we feel that we are accomplishing something worth while.

We have two meetings each year, in January and July rotating among the various cities. We have two-day sessions. The first day is spent in discussing various problems that are common to all and giving each other the benefit of our experiences, etc. The second day is spent in inspecting shops and carhouses.

AVERAGE MILES PER PULL-IN AND PERCENTAGE OF INCREASE IN MILES PER CAR PULL-IN FOR EIGHT MONTHS OF YEAR ENDED AUG. 31, 1923

Property	Average Miles Pull-In per Chargeable to Carhouse.	Average Miles Pull-In per Not Chargeable to Carhouse.	Total Average Miles per Pull-In.	Percentage of Increase in Miles Operated per Pull-In.
Atlanta.....	8,143	16,971	5,502	71
Birmingham.	10,683	61,244	9,095	173
Dallas.....	2,353	6,639	1,737	16
Knoxville....	8,929	24,135	6,517	772
Little Rock..	8,944	19,045	6,086	251
Memphis....	15,128	42,601	11,164	2
Mobile.....	6,201	17,508	4,579	3
Nashville....	10,948	27,049	7,202	107
New Orleans.	45,394	40,679	21,454	665

*Control and Handling of Materials and Supplies**

By P. F. McCall
Superintendent of Materials and Supplies
Chicago, North Shore & Milwaukee Railroad

Handling of Stock in the Storeroom Is Facilitated by Proper Methods — Perpetual Inventory Is as Effective as Annual System and Less Subject to Mistakes

THE business of controlling and handling materials has certain fundamentals which may not be disregarded. Charged with the responsibility of requisitioning, receiving, storing and accounting for all materials used on the property, it behooves the storekeeper to employ methods which will keep his stocks intact until the materials are placed and charged to the proper accounts. The most effective methods of properly controlling materials include the use of a stock book, a standard classification of materials, accurate inventories and daylight storekeeping.

A stock book should be maintained for more important uses than as a mere history of material purchases and disbursements. Properly watched, it will eliminate that sad old story, "We are out of that item; come back next week," as the use of minimum records will point out the low level to which the stock may be carried safely. It will also disclose to the observing storekeeper obsolete or slow-moving items of materials; give an accurate check on scattered or isolated stock; show the turnover for any desired period, and as an indicator of future requirements will more than justify the expense of its maintenance.

Proper control of stocks is greatly facilitated by the use of a system for the classification of materials into groups according to their general or specific uses. Having determined a class to which an item of material properly belongs, a designated symbol or lot number, other than that furnished by the manufacturer, should be given that item.

The physical arrangement of the stock in the storeroom should follow the same order in which the items are listed in the stock books. By using a lot number system and applying the same lot numbers to the pages in the stock book or ledger a cross index system is given for ready reference. If values are carried in the stock book a consolidated report can be made out in classified order at any period desired, showing the value of stocks on hand, purchased and disbursed in each class.

The generally accepted idea of an inventory is that the stores department should be closed up for the time required to count and weigh each item at least once a year, but it is questionable if this is just the way to do it. On most properties the stores department has become a very necessary part of the railroad organization, and to close up this department for a period of several days necessarily has a very decided effect on others who rely upon it for service. Up-to-date manufacturing companies have ceased to close for inventory purposes. They have instead installed systems which will tell them at all times the amount of money tied up in their raw and finished products.

A perpetual system of inventory is just as effective as the general annual inventory and is less subject to mistakes because the organization is not rushing to get it finished. Further, the perpetual system permits of frequent small adjustments which are not possible under the annual system. On the railroads which I represent we maintained the perpetual inventory for a period of over five years before our officers decided that a general annual inventory should be taken, and we found that the total adjustment necessary upon the completion of the work was about one half of 1 per cent.

Good housekeeping is a very essential thing in the proper control of materials, and I know of no better way than to use what is known as the daylight system of storekeeping. The system is very simple and consists of skeleton shelving with trays, into which the materials are neatly piled in uniform count. The trays containing the materials are then piled on top of one another. A collective system of tagging is used, beginning at the bottom and running to the top, so that the amount shown on the tray next to the top which contains the highest uniform count, plus the broken amount in the tray on top, gives at a glance the exact number of pieces or pounds in each tray.

This same idea can be carried into shops and yards where bulkier items of materials are stored, such as ties, rails, lumber, etc. These materials can be handled in exactly the same manner as those in the storehouse, with the exception, of course, that no trays are used. Materials are simply piled in uniform units, which are very readily counted without being pulled down or moved for inventory or reordering purposes. After having used this system only a short time I found it necessary to make a check of our maintenance of way materials some ninety days ago, and it developed that we were able to take the inventory in just 50 per cent of the time formerly used to inventory the same amount of material.

The system discloses at once any careless or dirty methods of storing material, particularly if the shelving is painted white. The whole scheme is made much more pleasing by having a white storehouse interior. This may seem ridiculous in view of the character of materials handled on electric railways, but it is surprising how long the effect can be maintained.

Storekeepers owe it to their companies and themselves to insist upon the best housing facilities for their materials that the financial condition of the company will allow, keeping in mind that the materials in their care often represent more value than the cash carried in the treasurer's vaults. A clean, orderly system of housekeeping in storehouses and yards, together with an energetic effort on the part of the storekeeper to have his department render real co-operation and service to the department using the material, is bound to bring recognition from his executives and success to the department as a whole.

*Abstract of a paper before the annual convention of the American Electric Railway Engineering Association, under the auspices of the committee on purchases and stores Atlantic City, Oct. 8-11, 1923.

Some Practical Results of Commission Regulation

In a Symposium Conducted by the American Association, the Public Service Commissioners Themselves Tell What Has Been Accomplished—The General Trend of Regulation Is Favorable, Although There Have Been Some Unfortunate Laws Passed that Have Made the Work of Regulatory Officers Difficult

A NUMBER of the leading utility commissioners were invited by President Emmons to take part in a symposium at the Wednesday morning session on the general subject of public utility commission regulation. The response to the request was excellent, and the papers presented showed that the speakers have been giving much thought to the problems of the day, one of the most pressing of which is the ever-present one of bus competition.

The symposium was opened by Dwight N. Lewis of the Iowa Board of Railroad Commissioners. He was followed by Henry C. Attwill, chairman Massachusetts Department of Public Utilities; Charles C. Marshall of the Public Utilities Commission of Ohio; Lewis E. Gettle, chairman of the Wisconsin Railroad Commission, and William Milnes Maloy, chairman of the Maryland Public Service Commission. The interest taken was so great that it was found necessary to defer until Thursday the paper by Henry C. Spurr, editor of *Public Utilities Reports*. Abstracts of the addresses appear below.

The Iowa Law of Convenience and What It Implies*

By Dwight N. Lewis
Member Iowa Board of Railroad Commissioners

WE HAVE recently had added to our duties the administration of a motor bus and truck law. Like the psalmist sang of himself, "It is fearfully and wonderfully made." In one section it provides that the board shall grant a certificate of operation to a bus or truck operated for public hire if it is shown it would promote public convenience so to do. The words "or necessity" were in the original bill, but were stricken out on later consideration of the measure. The penalty clause, also the one requiring the board to fix rates, were both stricken from the bill in final passage. The only penalty now provided is that the board may revoke the license.

Dwight N. Lewis

The question is being presented to us constantly as to whether a particular bus or truck line will produce such competition as will be ruinous to competing steam or electric railways. The only question under the law for our board to determine is whether the public convenience will be promoted by the establishment of the proposed bus or truck line.

In every case presented to us thus far since the law became operative merchants, professional men, citizens of all classes of occupation have insisted that such service would promote the public convenience. Railway operators, both steam and electric, have appeared before us protesting the granting of the franchises on the grounds that adequate service was then being provided by the carriers already established on the proposed route, that the addition of parallel and competing transportation would be an economic waste, resulting disastrously to the carriers by rail. The law does not provide that we shall consider anything but the promotion of public convenience.

Just what the promotion of public convenience means is not easy to determine. Must we take into consideration the possible effect of bus competition on the business of rail carriers, and its resulting consequences on the service which such rail carriers may eventually be justified in rendering to the public as a whole? Is the carrier by rail so sacred in the eyes of the law that there may never be a competing system of carriage permitted? Must all progress in the methods of carrying passengers and freight for hire be halted because the carrier by rail is already on the ground? If the public demands the right to ride in buses on the public highway or send its goods by motor truck, is it the business of a railroad or utility commission to say no? I am aware of the many commission decisions and some court decisions wherein it has been held that under the clause "public necessity" there was no necessity for the additional service by bus or truck when a carrier by rail, ready to serve, was already on the ground. How about it, however, when a commission is explicitly told by the legislature to consider the promotion of public convenience only? If, under these circumstances, we find it would be convenient for the public to have a bus line between two given points, competitive with a rail carrier, would it not further promote public convenience to have two bus lines or three or four, or a bus every five minutes maybe? *Reductio ad absurdum* perhaps.

It is not the business of an administrative body to determine the policy of the state. If the supreme legislative power says the promotion of public convenience is only to be considered, then it is not our province to inject other conditions into the act.

My own opinion might be that the rail carrier, with its hundreds of thousands of dollars of investment, ought to be protected; that it is in the interest of the public that the great tax-paying carriers by rail should not be hampered or destroyed by a bus or truck competition that may render service of a day or a month or a year, then find it unprofitable and quit.

You gentlemen engaged in the operation of systems of electric railway must meet and overcome the increasing competition of bus lines or get ready to quit. The outcome, it appears to me, is inevitable unless our legislatures come to the affirmative relief of the rail carriers.

It may be that the public demand for bus and truck service is a passing phase of transportation, but frankly, I do not think so. The ox train gave way to the steam train, the horse and cable car fell before the swiftly moving electric. Is the electric street car and the electric interurban line to pass into history with other discards of transportation and the motor bus and motor truck make of our highways the great means

*Abstract of a paper before the annual convention of the American Electric Railway Association, Atlantic City, N. J., Oct. 8-11, 1923.

of public travel, as the caravans of old used the military roads of Rome?

It may be so, but before that day comes the public who builds and maintains these roads should protect itself against the additional expense, which the motor carriers should be compelled to pay, and better regulatory laws should be passed than the one under which we are trying to function in Iowa.

Altogether too late, the public may find that it has traded a cheap method of transportation for one that is costly, unsatisfactory and transient. In the meantime, what is an ordinary state commissioner going to do about it when his legislature tells him to grant a certificate if, upon investigation, he finds the proposed bus or truck service would promote public convenience?

*Public Regulation in Massachusetts**

By Henry C. Attwill

Chairman Massachusetts Department of Public Utilities

THE Great War, as we all know, put public regulation to a severe test, and in the minds of many well-informed people public regulation failed to meet the test.

Public regulation is good, bad or indifferent, according to the powers the public board exercises and more particularly according to the courage and the character of the persons who constitute the board. In Massachusetts I feel on the whole that the regulating bodies during the war met their responsibilities well. It is true that in Massachusetts the two largest railway systems passed from private management into public management and control, one the Boston Elevated Railway system, in my judgment permanently, the other the Eastern Massachusetts Street Railway, formerly known as the Bay State, temporarily.

It was not due to public regulation, as we understood the term, that the disaster was brought about in relation to the Boston Elevated Railway system, but it was due to the increase in cost of transportation which made that company unable to carry passengers in a single continuous passage in the same general direction over the system for 5 cents, as was required by an act of the Legislature passed in 1897.

Public operation is to continue until 1928 and thereafter until such time as the Commonwealth may determine to surrender back the control of the properties to the stockholders. The trustees have operated the road now since 1918 successfully and I believe to the satisfaction of the public.

The situation in relation to the Eastern Massachusetts Street Railway was somewhat different. There was no limited fare. The company could increase its fares with the approval of the state regulating body so as to meet the mounting cost of transportation. There again the Commonwealth, through its Governor, appointed five trustees to manage and operate that system. It did not, as in the elevated act, guarantee any dividends. It assumed no obligations whatsoever other than to guarantee the payment of certain serial bonds which under the act the trustees were authorized to issue, not to exceed in the aggregate

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$5,000,000. The operation of that road by public trustees ceases at the expiration of ten years. The other street railways in Massachusetts have continued under private management, substantially with the same laws that applied to them prior to the war.

In the latter part of 1919, the department of which I am a member was organized. It took over the powers that were formerly exercised by what was known as the Public Service Commission, and also the powers that were formerly exercised by what was known as the Board of Gas and Electric Light Commissioners. In view of the financial situation of the street railways in Massachusetts, its policy has been not to interfere with the management of those street railways in the determination of what fare should be charged to the public, or what fare areas should be established, so long as there did not appear in the new arrangement any undue preferential treatment or unjust discrimination.

Of course, they have been obliged to increase their fares to meet the increased cost, either by directly increasing the fare or by shortening the ride that formerly was given for the fare. With a few exceptions, the street railways of Massachusetts have steadily improved in their financial condition, and I believe that the financial crisis, so far as the railways are concerned, has been passed.

It will be observed that broadly the general policy of the commonwealth of Massachusetts is this: that it proposes to allow public utilities to secure sufficient revenue in charges to preserve the financial integrity of the utilities. We in Massachusetts believe that any other policy is suicidal and is bound to result in disaster both to the public and the utilities alike.

Notwithstanding the sound and conservative manner in which Massachusetts has dealt with her utilities, it has not, in my judgment, dealt with the so-called jitney or motor bus adequately. That has been left to the local communities to determine whether they will have motor vehicles carrying passengers for hire in competition with the street railways. The only thing the state board has to do with it is that the street railway or any person has a right to appeal to the state board in relation to the regulations which govern the operation of the motor vehicle.

We have been in much the same position as that referred to by the previous speaker; that the policy of whether they will compete under the act is not for us to determine so long as the regulations which govern them insure the safety of the passengers and adequate compensation in the event of disaster.

Street railways in my judgment must give the motor vehicle careful consideration. In Massachusetts the local communities have exercised on the whole splendid judgment in granting licenses to motor vehicles, but in some areas we still have unwise competition, but it seems to me the only intelligent thing for street railway companies to do is to pre-empt the field in relation to motor buses and establish such service wherever they can, where the buses will pay and the street car will not pay.

I think the railway companies have been too reluctant in the past to do that which private individuals are attempting to do with the motor buses. In Massachusetts there is no field for the motor bus and the street car competing with each other. Where such a situation exists it means that either one or the other, or both, will have to go out of business. After all, when all is said and done it is largely an economic question.

In conclusion, I am going to express to you some convictions that I have gained through my experience in public affairs. In order that I will not be misunderstood or that I will not be misquoted, I propose to read to you those convictions if you will bear with me for a moment:

It is only by wise and intelligent regulation of public utilities that their operation by private management can hope to succeed. Such regulation can only be exercised by the same board with broad powers, representing the public. Such a board must be constituted of men of intelligence, but above all men of character and courage. The members of the board must recognize that the utility, to serve the public, should be assured of conditions which will enable it, under honest and prudent management, to obtain a fair return upon its invested capital.

Courts, with but indifferent success,

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have tried to define what is a fair return. Their lack of success in defining with exactness and precision what is a fair return arises from the fact that the question is an economic one, rather than a legal or constitutional question. To obtain a fair return, a public utility ordinarily should be allowed to charge rates that will maintain its credit and enable it to issue its securities at par. This, of course, assumes that the company has been honestly capitalized and prudently managed. Given these conditions, any return less than that necessary to maintain its credit and yet enable it to issue its stock and bonds at par is an inadequate return and will result in injury to the company and the public alike.

Without credit and without the ability to secure new capital, no company can hope to give the service the public requires and demands. The public utilities, in my judgment, will never obtain the desired result by resorting to the courts. Ordinarily such action tends to create hostility upon the part of the public, whose good-will the utility should constantly cultivate. It is only by constantly educating the public that, after all, so long as only reasonable returns are derived by the public utilities their interests are those of the utilities, that successful operation by private management will succeed. On the other hand, this result cannot be secured unless the managements of the utilities realize that they are engaged in a public service in which the public is entitled to the best measure of service obtainable for the least charge reasonably necessary to maintain the utility in a sound financial condition.

*Killing the Goose that Lays the Golden Eggs**

By Henry C. Spurr

Editor of "Public Utilities Reports"

ÆSOP was a very keen observer. In story form he illustrated some very common traits of character. There was a certain man, he said, who was fortunate enough to have a goose that laid golden eggs, but not being satisfied with a golden egg a day he decided to hasten matters by cutting up the goose and seizing the whole treasure at once. The result was that he lost everything. Now, the man might have said to himself, "I have a very unusual goose. It is true that it lays golden eggs, but, unfortunately, it has an appetite, just like any other goose. Perhaps it will not do to kill it. I have a better plan. Instead of cutting up the goose I will cut down its food. Instead of giving it two handfuls of barley corn I will give it only one. I will thus save on the feed and make on the eggs." But in the end this policy would be as fatal for the goose and as bad for the man as the other.

Similar Treatment of Railways

For a number of years the public, by the machinery set up for that purpose, has been trying to find out how little corn the goose can get along on. We have been very much concerned about whether we should give the goose six, seven or eight handfuls of corn in exchange for the golden egg. Not only that, we have often been quite nasty to the goose. Notwithstanding the golden eggs, we have called the goose hard names. We have looked upon it with more or less distrust and suspicion. Our politicians have deemed it a fair object for abuse. There has been very little thought of treating it with kindness of generosity. Its appetite for corn has been a constant source of annoyance. Some have gone so far as to say the public is entitled to the golden eggs anyway, and that it doesn't matter whether or not the goose has any corn.

While the Board of Trade of Birmingham, England, was investigating railway charges it received a number of interesting letters from shippers. One of these, which the board said was characteristic, ran as follows:

"What we shippers want is to have our fish carried at half the present rate. We don't care a ——— whether or not it pays the railways."

Have we not seen many letters of this kind in the newspapers of this country on the question of the 5-cent street railway fare?

This attitude of the public toward the railways is, however, not so very surprising. It is a very common human trait or else Æsop's fable would have had very little point. The tendency to abuse our greatest benefactors is quite common. It often happens that

> It's the man who does the best
> That gets more kicks than all the rest.

These tendencies, however, while prevalent, are not universal and are subject to correction, and the problem is how to convince the public that the goose cannot live without food; that if there is any question as to the exact amount it needs, it is better to be liberal than niggardly; that after all a golden egg may be worth more than even seven or eight handfuls of corn.

The problem of how to make the public understand this is difficult of solution not only because of the weakness of human nature pointed out by Æsop but on account of the false attitude of the public toward its utilities.

The most serious obstacle in the way of a wise policy of utility regulation is the hostility of the public toward its utilities, and especially toward the railways. Perhaps street railways are worse off in this respect than all the others. The average citizen working in a shop or factory or holding some job behind a counter, or perhaps practicing law or medicine, is usually willing to admit that he knows little about the proper administration of a great private business enterprise, but no matter what the education or experience of the average citizen may be, he generally assumes that he knows more about how a street railway should be run than the men engaged in that business who have made a careful study of its problems. He therefore thinks he sees things to complain about which ought not to be complained about at all. It is largely a matter of attitude. As everybody knows, we do not care very much about what our friends do, but we are exceedingly fussy about the etiquette of our enemies. Hostility always breeds trouble.

It is therefore obvious that if this attitude of the public could be changed to one of friendliness toward the companies, as it should be, it would permit of the establishment of a most enlightened policy of regulation, which in my judgment would mean a minimum interference with the business policies of the companies and the allowance of a liberal return, such a return as would be really attractive to capital.

The public, with its mind open, could be made to see that perhaps it would be wise to allow the goose a litt'e more corn than we have been giving it for its golden eggs. No such policy is possible, however, while the public mind is in its present state. No commission, adopting such a policy, could live. Even the allowance of very moderate increases in rates following the war put commission regulation under a severe strain, subjecting the commissions to violent political attacks in various parts of the country.

Public Hard to Convince

One would think, if the facts were with the railways; in other words, if they deserved the confidence and friendship of the public, they would get it On the surface it would seem that it would be necessary only to lay the cards on the table face up, as the saying is, but the cards have been in that position for a number of years. Under state commission regulation the books and other records of the companies have been opened for public inspection. We have found out all that we thought needed to be known about our railways and other utilities, especially how much money, if any, they were and are making. State regulation has shown the popular belief that utilities were operating at extortionate profits to have been a myth, but the average ratepayer's belief in the myth persists.

The public is very much like the insane man who thought he was dead. Nobody was able to convince him that he was alive. One day a physician had what he considered a happy idea. He would show the insane man that he was not dead. So he said to him:

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"You think you are dead."

"I am sure of it," interrupted the insane man.

"Well," continued the physician, "I shall prove that you are alive. Let me ask you a question. Did you ever see a dead man bleed?"

"No," answered the insane man.

"Did you ever hear of a dead man bleeding?" asked the physician.

"No," was the answer.

"Do you believe a dead man can bleed?" continued the doctor.

"No," was the prompt response.

"Now, I shall show you that you are not dead," said the physician, taking a scalpel and drawing a little blood from the insane man's arm. "You see that you bleed. That proves that you are not dead."

"No," replied the insane man. "That only proves that a dead man can bleed."

The public was sure that the railways, as well as the other utilities, were making enormous profits, and that they only pretended that they were not. The public said: "We will set up commissions and establish the facts beyond peradventure." But when the commissions began to report that the railways would have to have more money; that they were not making unconscionable profits; in many instances were not making any profit at all, did the average car rider say, "This proves that I was wrong. The goose really needs a little more corn"? No, what he said was: "This proves that the books have been tampered with and that the companies control the commissions." I base this statement on newspaper editorials I have read and on expressions of opinion of persons with whom I have talked.

If the public were actually insane on the subject, it would be useless to try to convince it of the truth, but it is not insane. It is merely very strongly prejudiced against its railways and other utilities. Therefore the task of opening its mind by winning its friendship, while difficult, is not an impossible one and it must be accomplished. The public must be protected somehow against the politicians and a certain group of radicals who are constantly feeding upon its fears, suspicions and superstitions and urging it to injure itself under the mistaken notion that it is merely injuring the stockholders of the railways.

There is every reason why the public should be friendly, rather than hostile, toward its railways. An ordinary business enterprise, employing as many men as a street railway and conferring as much benefit upon the community, would be looked upon with friendly eyes and pointed to with pride. Why should not a street railway company—especially under state regulation—be viewed in the same way? What industry is more vital to the welfare of the community?

The attention of the public must be withdrawn a little from the corn and fixed upon the golden eggs. The value of street railway service to the public must be constantly emphasized. From Jan. 1 to July 31 of this year 59,483,519 passengers were carried on the Rochester lines of the New York State Railways. The average daily number of passengers for the first seven months of the year was 280,582, almost the entire population of the city. The average haul was approximately 3 miles. This does not look as if we could get along very well without our street railways. Aside from the mere convenience of this form of transportation for the average citizen, think of what it saves him in money. Think of what it would save him even if the fare were 10 cents instead of 7 cents, as it is.

The residents of the city have a choice of three ways of getting to work. They can walk, use an automobile or take the street cars. Assuming that the average distance from their business is 3 miles, as the average haul indicates, the saving of time back and forth, allowing for all delays, would be from an hour to an hour and a half at least. Is not the time of the average citizen, whether for work or for play, worth much more than the street car fares? If the street cars are used in preference to an automobile the saving is considerable. I do not know whether this has ever been estimated, but some one who is good at figures ought to be able to demonstrate about what is the saving per passenger, and this multiplied by the number of passengers a day and a year would undoubtedly show an enormous saving to the community —golden eggs indeed. This would not be the whole story, because the appreciation in real estate values due directly to the operation of the railways, as well as the benefits to business concerns as the result of bringing employees and customers to their doors, would have to be taken into account. The street railways have always put more money into the pockets of the people than they have ever taken out.

The golden eggs are worth more than the corn. The public, by constant repetition of the facts, must be made to understand this. It must be made to see how it is protected by state commission regulation from unjust charges and why it is as necessary for street railways as for any other business enterprise to make some profit, why it is to the interest of the car riders themselves that their railways should be prosperous.

Stress the Interest of the Ratepayer

This is the important point. The interest of the ratepayer must be stressed rather than that of the company. The patrons must be made to understand their true economic relation to the companies. Let me illustrate: One day I saw an advertisement in a street car. It called attention to unjust paving charges. It stated that the railway was willing to pay reasonable taxes, but asked if the car riders thought this particular tax was fair to the company. It was an appeal for a square deal, but I imagine it received scant attention from the average street car patron. His attitude would probably be: "I should worry about any injustice to the street railway company on account of taxes. I have enough of my own to bother about." Perhaps he might go so far as to say: "I am glad of it. I wish the railway taxes were higher than they are and that there were more of them." The trouble with advertising of that kind is that it does not make the rider see his own interest in the matter. What happens when the company is required to do this paving? In one Pennsylvania town the company was forced to pave the highway from curb to curb. In the city of Rochester, N. Y., 56 per cent of the street area on streets on which the cars run is paved by the railway company. If there were no railways on these streets the cost of this paving would be assessed against the abutting property owners, where it belongs, as it is their property which is directly benefited and appreciated in value. The upkeep would be assessed against the city at large, because it is the general public that uses the pavement. But in addition to making the street car riders pay for the paving, they are often charged something in addition for using the pavement they have paid for.

Why, then, not point this out? Instead of asking, "Is this fair to the company?" why not ask, "Is this fair to you, Mr. Ratepayer? Do you want to pay somebody else's assessment, or any portion of it? How do you expect lower fares if you are forced to pay somebody else's taxes? Why should you pay for the use of the streets when the fellow who owns an automobile uses the streets without charge?" Why not say: "The company is making this fight for you, Mr. Car Rider." I mention this because I have seen both kinds of appeals to the public, the one emphasizing the interest of the company and the other, as it should, the interest of the ratepayer.

The jitney question should be discussed in the same way. The public must be made to understand that automobile competition with street railways when prohibited is not prohibited primarily for company profit but for the profit of the street car riders.

Same Principle Applies in Wage Disputes

Perhaps nothing engenders more hostility against the companies than wage controversies with their employees, followed by a strike. The car riders themselves almost always side with the strikers. The politicians are in the same camp. Whatever the merits of the controversy may be, the patron of the railway must be made to see that the strike is really against them and not against the company, because it is the car riders who pay the wages. If the claim for the increase is just, well and good; the riders must be made to see that under state regulation, assuming an efficiently operated railway, they are the ones who must remove the injustice by any necessary increase in fares. If the claim for higher wages is unjust, let the riders understand that the company, in resisting, is acting in their interest. This is what I mean by

stating that the true economic relation of the ratepayers to the companies must be emphasized.

Finally, if a cordial attitude of the public toward its railways is to be secured they must be kept beyond the reach of local politicians. When the railway company operating in Rochester asked for an increase of fare from 5 to 6 cents the local authorities would not allow the state commission to pass upon the question. They succeeded in getting a court decision that the commission was without jurisdiction. Then the city entered into a service-at-cost contract with the company in which the fare was fixed at 7 cents, but provision made for a sliding scale of fares and dividends. This was probably a good contract for the city. The city has a representative called a Commissioner of Railways to look after its interests. But certain newspapers, politicians and others refuse to let the company and the contract alone. They have demanded that the Legislature set it aside, and they are now demanding a new valuation. We have had one municipal campaign in which street railway issues were involved and we shall have more, with the result that undeserved animosity will be stirred up against the company which it will be very difficult to remove. State regulation is not perfect, but it is much better than this.

In conclusion, it should be obvious that no one suffers more from an unfriendly attitude toward the railways and the failure to understand the simple economic laws involved than the public itself. The ratepayers lose by it in the long run. Nothing is gained by killing the goose that lays the golden eggs.

*Utility Regulation in Ohio**

By Charles C. Marshall

Member Public Utilities Commission of Ohio

IN OHIO the regulation of railroads has existed for many years, but the regulation of public utilities began in 1911, when the first commission act was passed. In 1913 the present law was passed, and while this law was being shaped into form by the legislative committees many theories were presented to the General Assembly, resulting in a compromise bill being finally passed. This was due to the fact that the balance of power in the Legislature rested with the large city delegations that were holding out for a law reserving to municipalities the right to fix utility rates and the regulation thereof, with no right of appeal to a state commission. On the other hand, there were those who believed that the utilities were creatures of the state and that the reasonableness of their rates, adequacy of the service rendered by them and the general supervision thereof were of state-wide importance and that they should be regulated by a state commission. The result was a utility law vesting certain general powers of supervision and regulation of certain utilities in the state commission, but reserving to the municipalities the initial rate-making power with appellate jurisdiction in the state body.

We found at the beginning of the war period most of our utilities bound by rates fixed by municipalities, in most cases for a term of years covering the entire war period and longer, and because of the increased cost of labor and material many of them were unable to secure additional capital to make necessary betterments to their properties to enable them efficiently and adequately to perform their public obligations.

The Supreme Court of Ohio has held that the Public Utilities Commission does not have power to alter or revoke any contractual relations existing between a public utility and a municipality. I am not censuring the court, for I think that is the law in Ohio, but I believe that the State regulatory body should be vested with the power to change rates to meet fluctuating economic conditions and thus insure a proper return to the utilities at all times, and adequate service to the public. This is as important to the public as it is to the utility, for without an adequate return efficient service cannot be rendered.

C. C. Marshall

Regulation by State Commission Best

Under the old order of things, municipal politics were controlled by bosses, who compelled the utilities to "pay the freight" necessary to carry the political machinery, and if the utility refused to be bled, its rates were so reduced that its service was inefficient, and the public suffered no less than the utility. In many of our municipalities an organized minority which wants to make the utilities a political football in every municipal election is still able to elect agitators as members of Council and thus inflict great injury upon both the utilities and the public they serve.

The system that permits of this form of regulation is faulty, is wrong. The fixing of the initial rates to be charged for a utility service by a Council composed of men elected by the people who pay for the service to be rendered and who have no facilities for ascertaining the facts on which to base a proper rate is like placing a man on the jury to try his own case. The remedy is to vest that power in a body of disinterested men where such disputes may be settled strictly upon the merits of the case.

Another great benefit resulting from commission regulation in the matter of rate controversies is the intelligent ascertainment of the proper rate to be charged, which intelligence can only be acquired by a governmental body equipped with an available trained staff of engineers, qualified in their respective lines properly to value the property of the utility. This kind of an organization, of necessity very costly, can profitably be maintained by the state to the benefit of all, while it is out of the question for each municipality to maintain or in many cases procure such services, due to lack of funds.

One of the most beneficial results of commission regulation is the authority vested in our state commissions to supervise and regulate the issuing of railroad and public utility securities. Since this supervision has been vested in the state commissions, at least in Ohio, the great majority of investors no longer have the fear of "watered stock and bonds" that existed when the issuing of railroad and utility securities was a matter vested solely in the officers of the railroads and utilities.

From the best obtainable statistics on Jan. 1, 1923, the amount of capital investment devoted to giving Ohioans gas, telephones, electricity and electrical transportation was $1,002,500,000 and the resident investors in such securities numbered 150,000.

State Control of Monopoly

I am a strict believer in the protection of honest effort and honestly invested capital of our railroads and utilities, by vesting authority in each state commission to compel any railroad or utility desiring to enter any territory already occupied by a railroad or utility giving adequate and efficient service to secure a certificate of public convenience and necessity, after public hearing of all the parties interested. In Ohio we have progressed to the extent that the Legislature has passed such laws applying to telephone and motor transportation companies operating on our public highways, but as to other utilities that does not apply.

I have heard the claim many times in my official career that the "certificate of public convenience and necessity law" created a monopoly, but I have seen many cases where utilities have been occupying certain municipalities or territories giving efficient and adequate service for reasonable rates, and new operators have come in and been granted franchises to enter and serve the same territory, thus creat-

*Abstract of an address before the annual convention of the American Electric Railway Association, Atlantic City, N. J., Oct. 8-11, 1923.

ing unfair competition and eventually causing both companies to fail, depriving the public of any service. Little by little the thought has got into the brain of the public that the word monopoly isn't such a desperate word after all, and it is slowly but surely arriving at the conclusion that it is the sufferer by this form of competition, and, further, that the way to get the best service at the lowest rates is to have a monopoly in the territory where the utility operates and then strictly regulate its service and earnings.

In 1922 the city and suburban electric companies of Ohio carried 735,138,200 passengers and had an invested capital of $413,789,062, while the interurban companies carried 215,497,586 passengers and had an invested capital of $215,331,365. Those combined companies paid nearly $6,000,000 taxes.

In 1921 the operating revenues of these Ohio interurban railways were $24,097,851 and in 1922 $20,234,484, or a decrease of 16 per cent.

I am convinced that these companies are trying to meet their competition in the wrong manner. In many instances they are giving too much passenger service and neglecting to secure their share of the freight business that is justly due them. If these companies would develop the less-than-car-load freight business and operate only the number of passenger cars necessary to give adequate service, I am sure the increase of revenues will put most of these companies comfortably on the black side of the ledger.

The trend of the times is toward public utility regulation; it will progress; no man or set of men can stop it. Let us adopt progress in public utility regulation as our watchword, and be ever vigilant in reaching the coveted goal of full, fair and faithful service to all, at remunerative rates.

*Wisconsin's Policy and the Milwaukee Franchise**

By Lewis E. Gettle

Chairman Wisconsin Railroad Commission

EVERY municipality of considerable size has had its "traction question," which has been an inexhaustible source for political platforms for local congressional or even statewide contests. For half a century aldermen, mayors, legislators and governors have ridden into office on the waves of righteous indignation or perhaps ignorant prejudices directed against "traction interests." This sort of war still goes merrily on in some of the greater cities. The contest is generally bloodless, but often vast reservoirs of lethal gas are liberated and directed toward the enemy.

In our own state the financial struggle of most street railways and a great many interurban companies to give a reasonable minimum of service has been so intense that public sympathy and concern for the continuation of service have replaced much of the former intense antagonism. The commission in Wisconsin has promoted and fostered a better mutual understanding between companies and the public. Wherever it could possibly do so, the commission has approved economies of operation. In numerous smaller cities one-man car operation has wholly replaced the two-man car. Where there has been such substitution shorter headway has been provided and safety regulations have been stiffened. Such substitution has elicited various degrees of violence in opposition, mostly founded on suspicion, pride or prejudice, but after fair trial and after the public has understood the situation the substitution in question has received at least tacit approval.

In several cases the Wisconsin Commission has given expression to its conviction that the street railway cannot be supplanted by other modes of transportation, at least for many years, and that as competitive forms of transportation invade the normal revenues of the street railways public requirements for special drains on the companies' revenues should be discontinued or lessened. To this end the commission has gone to the length of straining its probable legal rights and prerogatives in ordering extension of lines and service thereon, against the vigorous protest of the companies concerned, but only on condition that the municipal councils would as condition precedent to the effectiveness of the orders relieve the companies of paving requirements which the cities might insist on being fulfilled. We believe that neglect to provide adequate intraurban transportation is a sanitary and social error the responsibility for which in the absence of a return to the company such as will attract capital necessary for extensions of service rests in part at least on the municipality itself. Undue residential congestion, the denial of play space, fresh open air, gardens and flowers to the teeming childhood of our fast-growing cities, borders on cruelty if not criminality. In this connection may I say that motor vehicle passenger transportation should be permitted and encouraged, not as a substitute for street railway service but as auxiliary and supplemental thereto. Electric railway service must continue to constitute the primary mode for rapid passenger traffic, on the cheapness and efficiency of which the public health, happiness and social welfare of the great mass of workers of moderate incomes so vitally depends.

If there were time I should like to tell you of a most interesting experiment that is being undertaken in our largest city. In brief, after years of the usual acrid, bitter warfare between the people, politicians and the traction company at Milwaukee a committee of citizens representing various shades of political affiliation, and acting in behalf of the mayor and council, under sanction of legislative acts, was met by representatives of the company and after more than two years of intense study and conference, with the aid of experts, a proposed "service-at-cost" contract has been worked out. This proposed contract covers the numerous fundamental questions which erstwhile furnished the battleground of non-co-operative operation. The management of the properties remains in the company until the city elects to purchase, but the city prescribes the quantity and quality of service and agrees to rates affording revenues equivalent to the cost of service. The city is also permitted to participate in the financing of the properties.

The outcome of this businesslike effort to substitute a fair and honorable solution of traction difficulties by mutual contract and co-operation, in place of destructive antagonism, may point the way out of the disgraceful episodes which have so generally characterized relations of traction interests with municipalities.

*Abstract of a paper before the annual convention of the American Electric Railway Association, Atlantic City, N. J., Oct. 8-11, 1923.

*Commission Regulation Not Court Trial**

By William Milnes Maloy

Chairman Public Service Commission, State of Maryland

W. M. Maloy

I THINK it is a very good thing for the electric railway industry that you have a group of commissioners meet with you. It can do nothing but engender confidence on all sides. This procedure is right in line with the policy which I have always felt desirable and valuable in conducting the Maryland

*Abstract of a paper before the annual convention of the American Electric Railway Association, Atlantic City, N. J., Oct. 8-11, 1923.

commission, which is that all activities of the commission are conducted with fully open doors, everybody having facilities at all times to know the full procedure and activities of the commission.

The point I am particularly anxious to make is that it is desirable, in fact necessary, that we confine ourselves to first or basic principles in consideration of commission regulation. It does no good to blind ourselves to the fact that commission regulation has not in all cases been completely successful, although there is no doubt that much progress has been made. The reason it is not successful, as I see it, is that in too many cases the commissions themselves have conducted their affairs more on the basis of courts than of commissions, and more frequently, even when the commissions would do otherwise, the litigants, company and public, both forced the commission into a court procedure of making a record on the theory that this record is to be carried to a superior court. This makes nothing but a magistrate's court out of a commission, in practice, and thus militates against the realization of the benefits to the public which were anticipated when the commissions were organized.

I used to be a legislator and was chairman of the corporations committee and introduced the first commission law in the state of Maryland. I had high ambitions as to what the commissions would be able to accomplish. I saw first hand all the old experience and habits of lobbying, the politicians' attacks upon public utilities; I saw the futile attempts of the legislature to be a fair rate-fixing body. I also saw courts trying to settle utility affairs by court procedure according to law. When we enacted the public service commission bill I had high hopes that there would be set up a commission of high-calibered, courageous, capable men, respected by utility and public alike, who would be able as a strong administrative body, with delegated legislative rate-fixing powers, required to adopt judicial procedure to satisfy constitutional requirements as to due process of law and to consider utility regulatory problems and decide them on a business basis to the best interests of the public, whose creature they were.

I must say that my experience as a commissioner, not merely from the Maryland experience, but from watching commission regulation practices all over the United States, has been a disappointment to a certain degree on account of the point I emphasized above, that the commissions have been forced too much into court procedure. We have tried in our humble way in Maryland to follow the program according to the lines I believe in, but there are limitations not so much in the law creating these as in the public and utility attitude toward us, and I speak of commissioners in general on a national basis, which limitations have militated somewhat against our most effective work as commissions.

I would not leave you with the opinion that I feel we should abolish commissions and resort again to court and legislature control of details of utility regulations—far from it. What I do wish to leave with you is that commissions as such must be raised in the estimation of both the utility men and of the public; they must be given, by general consent, the status of a real administrative commission, for the regulation of utilities, not for their management, but for their regulation, so that there will be attracted to a commission men of the highest caliber, courage, training, ability and knowledge, whose regulatory decisions will be accepted on account of their inherent constructive merit.

*Progress Made Since the Report of the Federal Electric Railway Commission**

By Charles E. Elmquist
Formerly Chairman
Federal Electric Railway Commission

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Charles E. Elmquist

Work of the Commission Has Been Fruitful of General Improvement in the Electric Railway Situation—Favorable Public an Absolute Essential to Financial Success of Railways

A MORE friendly attitude concerning fares, paving requirements, new construction and curtailment of service became manifest after the Federal Electric Railways Commission hearing and report. The general public was convinced that an electric railway could not meet the appalling increase in the cost of operation without receiving more money for its services, and that the inflexible nickel fare and term contract were injurious to the industry and positively harmful to the public. Relief was given to more needy companies, and the emergency was safely passed. The industry now shows substantial, and I hope permanent, improvement.

The commission was instructed to "study and report upon the entire problem in order that the state and municipal authorities and others concerned may have the benefit of full information and of any conclusions and recommendations that may be presented." This injunction was obeyed and our report contained twenty-two findings and recommendations. Among these, and certainly the most important, is:

> The electric railway is an essential public utility and should have the sympathetic understanding and co-operation of the public if it is to continue to perform a useful public service.

This is not open to debate. The uncontradicted evidence as well as the experience of seventy-five years testify that the electric railway is the safest and most economical and useful and convenient means of transportation now available for moving the maximum number of people through the streets of our cities, and that no vehicle has been found to take its place.

Its essential feature being universally recognized, it remained for the industry to ascertain how to secure the sympathetic understanding and co-operation of the public. This was largely accomplished through publicity carried on by your committee of one hundred. Our findings and conclusions were used very effectively, and I think it can be truthfully said that the problems of the industry are better understood by municipal and state officers and the public than they ever have been in the past. There is now a frank recognition by the public that the electric railway is entitled to reasonable dividends upon capital honestly and prudently invested in properties which are efficiently and economically managed. This involves the admission that revenues can only come from services performed and that the charge for that service must be flexible enough to meet changes in operating and economic conditions, and that as a matter of fact, a fare of 4, 5, 6, 7, 8 or 10 cents may be just and reasonable according to the circumstances of each particular case.

My former associates were invited to express their opinion upon the outstanding results of the investigation conducted by our commission. Their answers are worth quoting in full:

Philip H. Gadsden says:

> Outstanding results from electric railway report are more intimate knowledge on the part of the public of the problems of the railways and the keenest sympathy with their difficulties brought about by the policy of frank and full publicity recommended by the commission. Except in one or two exceptional instances public attitude toward

*Abstract of an address before the annual convention of the American Electric Railway Association, Atlantic City, N. J., Oct. 8-11, 1923.

private operation has been strengthened by commission's report. The railway situation generally is very much better in every way than at the time of our investigation. The most gratifying phase of the situation is that there is a rapidly growing appreciation on the part of railway men themselves of the findings of the commission and an increasing effort to put them into practical application.

C. W. Beall says:

The hearings and report of the Federal Electric Railways Commission had the very good effect of continuously impressing the public and authorities and press with the direful plight and unfair conditions surrounding street railways at that time. Undoubtedly this had considerable effect in succeeding years in helping street railway companies to get higher rates and more reasonable conditions of operation. Undoubtedly the hearings and report had a beneficial effect upon refunding of old issues and sale of new issues for construction. They were very helpful in securing increased rates of fare and more favorable conditions for many street railway properties, without which they would not have been able to refund or raise new money. The street railway situation in general is very much better now than in 1919 and 1920 as most companies have received increased rates of fare and better terms from the public authorities. . . . The greatest trouble is that in a number of cities the public and authorities are still trying to have both jitneys or buses and street railways.

Louis B. Wehle says:

The Federal Electric Railways Commission report seems in the emergency to have facilitated friendly adjustments with the public about fares and the burden of street maintenance, but perhaps because financially relieved since 1919 by higher fares, the industry has not been impelled to follow the commission's chief suggestions that it face constructively its problems of overcapitalization and that it adopt a sound long range policy of valuation to insure earnings of its junior securities against periods of price depression. This still stands as the commission's challenge to the real financial staesmanship in the industry.

Reference will be made to the finding of the commission, which deals with the subject of credit. It reads:

The electric railways industry as it now exists is without financial credit and is not properly performing its public functions.

That is not true at present. The general improvement in the industry has largely restored public confidence and well-managed companies now experience slight difficulty in securing capital for refundments or for new construction. Approximately $350,000,000 of new money has been expended for additions and betterments since 1919. Although this is far below actual requirements, it should be borne in mind that in 1920 the cost of labor and materials were so high as to practically prohibit construction, and that in 1921 the bankers were exerting themselves to curtail loans, and of course the railways had not begun to earn enough in 1919 and 1920 to permit of large expenditures for new construction.

Other findings to be discussed in this paper involve rates and valuation, and since they concern one general topic they should be read together. The findings read:

Unless the usefulness of the electric railways is to be sacrificed public control must be flexible enough to enable them to secure sufficient revenues to pay the entire cost of service rendered, including the necessary cost of both capital and labor.

There can be no satisfactory solution of the electric railway problem which does not include the fair valuation of the property employed in the public service, and where that is done the companies should voluntarily reduce any excessive capitalization to the basis of such value.

Since the adoption of this report the 5-cent fare has become practically extinct, except in the city of New York, and contract fares are now regarded as objects of curiosity. Substantial progress has been made in placing the industry on a sound and healthy basis. Service-at-cost franchises are being used in fifteen cities, and the question of its adoption is under consideration in Milwaukee, Akron and Winnipeg. Indeterminate franchises are recognized by law in six states and the District of Columbia, the states being Wisconsin Indiana, Minnesota, Massachusetts, Louisiana and Michigan. In the following states the power of regulation has been transferred to public service commissions, to wit: Arkansas, Louisiana, Minnesota, South Carolina and Tennessee, and in Alabama powers of the commission were greatly extended.

Approximately 600 miles of new track has been built and about 1,534 miles abandoned, showing a net loss of 934 miles, but in connection with this statement it is to be observed that about 1,500 miles of bus routes are now operated by electric railways. This new departure in auxiliary railway service has developed since 1919 and represents the substitution of more economical service for the tracks that have been abandoned. This practice is in harmony with the portion of our report which reads:

That street railway service and jitney service cannot permanently exist and pay their own way in competition with each other under any ordinary urban conditions seems to be well established by experience and by the conditions inherent in local transportation service, but the belief is general that the motor bus may properly be used to supplement the service rendered by the street cars.

The use and development of the motor vehicle surpasses the wildest imagination of its early promotors. An article in the October issue of the *Geographic Magazine* gives the number now in use as 13,000,000, or one to each seven persons in the United States, carrying about 32,000,000 people each day, and costing for purchase and maintenance about $7,000,000,000 annually. Claims are being made that the saturation point in the country is 18,000,000, and as the average life of a machine is six years it will be necessary to construct 3,000,000 annually for replacements, that being the present production of our factories. One would be inclined to say that the vast army of machines carries daily and annually far more people than the street and electric railways, but a simple calculation proves that the service is given to about the same number.

This competition is formidable and shows no signs of diminution. Direful predictions of financial catastrophe seem to leave no impression upon the public mind and the riding habit goes merrily on, and most likely it will continue with unabated frenzy until some unusual economic upheaval brings to us once again an era of thrift and economy when a dollar saved will be regarded as more valuable than a dollar spent for gas. I own a car, but I walk part way to the office and take a street car the rest of the way, and always ride home in one. I confess my utter inability to understand the mental slant on the fellow who drives to his place of business and loses a lot of time and patience in locating a parking place on a busy street in front of a valuable property which he expects his car to occupy all day long. Parking space has reached the point of saturation in most of our cities, and this holds out a gleam of hope for the street railways. Would it not (and this thought is casually expressed) be a good thing to start a campaign of education on the relative expense, time consumed, convenience and general utility of the street car as compared with the automobile, and endeavor to convince the car owner that it would be greatly to the interest of himself and the public to patronize the street car morning and night?

Testimony submitted at the hearing by witnesses from Cincinnati, Pittsburgh, Boston, St. Louis and other cities, also by regulating officials and certain representatives of the industry, all lead to the conviction that no satisfactory solution of the problem can be reached unless the value of the property is fixed, and that the capitalization should be reduced to the basis of the value. In one large city, for example, two strikes occurred in as many months, but wages could not be advanced without an increase in fares, and the community opposed higher rates because it was known that the company in an early day had issued one share of stock as a bonus to the purchaser of each bond. Bonus or "hope stock" did not bring a dollar into the treasury. These practices flourished in the early days of electrification of street railway properties, when the valuation of the physical properties for rate-making purposes was not given any consideration.

It is quite obvious that promotion stock has now found its way into the hands of innocent purchasers for value, who expect dividends although the capitalization may be greater than the fair value of the property, and that is precisely the one thing the community objects to.

A striking example occurred in the Minnesota Legislature two years ago. The street railway interests sought to transfer to the state the jurisdiction over rates, accounting and valuation. Municipalities objected and the bill was bitterly contested. The Minneapolis franchise would have expired by limitation in 1923 and it was felt that a new franchise would be blocked by the Socialist members of the Council, who wanted to force public ownership upon their terms. Arguing the question before the joint committee a prominent Socialist referred to the question of watered stock and gave figures showing varying values of the property, as follows:

A Socialist group	$11,000,000
A citizen's committee	15,000,000 to 19,000,000
Mr. Pillsbury, an engineer	24,000,000
City engineer	26,000,000
Company	35,000,000

Here was a spread of $24,000,000, 6 per cent of which is $1,414,000, and

it would take 23,280,000 revenue passengers at a 6 cent fare to produce that money, and this figure omits any reference to the added cost of handling these passengers. It is obvious that some of these figures are wrong, and it is also evident that the public will not be satisfied that it is paying no more than a fair and remunerative rate until the value of the property has been fixed by some competent tribunal.

PUBLIC OPINION MUST BE FAVORABLE

The problem of the street railway is largely a psychological one, and influences will be at work against the public acceptance of increased fares so long as there is a belief that companies are overcapitalized and their values too high. No class of utilities is so wholly dependent upon the good will of their patrons as the street railways. People must have water, fuel and light, they must have food and raiment, but those who patronize the railway have the alternative of walking or of riding in buses or their automobiles. Therefore the railways occupy a different relation to the public than steam railroads or any other classes of utilities. It is not sufficient for them to win the judgment of the regulating commission and the courts; they must reach the bar of public opinion, and this is hard to reach and hold so long as wide differences exist in respect to value and excess capitalization.

The evidence overwhelmingly supports the conclusion that the proper solution of the street railway problem under private control depends upon the introduction of proper regulatory methods, followed by the correct valuation of the property and readjustment of capitalization when too high, and surrendering existing limited term franchises for indeterminate permits to be issued by the state. In determining the proper method of regulation consideration must be given to the industry as it now exists as well as to its normal and natural development. The companies operating within and between a large number of cities and villages cannot have as many different rates and standards of service, rules and regulations as there are municipalities served because that would intensify public sentiment against them, and also increase the cost of service. Obviously a central authority should be selected and given power to regulate rates, prescribe standards of service and accounting, determine the depreciation to be charged and probably control the expenditure of that fund, and also to prevent the issuance of securities in excess of the value of the property. Regard must be given to the strong home-rule sentiment that now exists throughout the country. People will not willingly give up the power to control utilities which so intimately affect their welfare.

Some states now have complete jurisdiction over utilities, and in numerous instances the cost of service franchises give very good satisfaction, but where legislation for the industry is necessary consideration might be given to a suggestion of this kind.

Give to the state control of those things which can be best done by the state, leaving to the municipalities the control of those things which most intimately affect their citizens. Among the powers to be given to the state is control of rates, valuation of the property, prescribing and supervising its accounting methods and controlling security issues. Municipalities should name the streets upon which the railways may operate, regulate routing and service and such matters as paving, sprinkling, the cleaning of streets and the extensions of new lines, but action should be subject to the right of appeal to the state commission in the first instance and then to the courts if dissatisfied with the order of the state tribunal.

I shall conclude this desultory discussion by quoting from the testimony of the Hon. Frederick J. MacLeod, chairman of the Public Service Commission of Massachusetts, found on page 1,438 of the printed record of our proceedings:

> Under proper public regulation dividends do not represent profits, but merely interest upon invested capital. To construct and maintain our street railway properties capital and labor are both required, and one is as essential as the other. It is just as impracticable to expect capital to be supplied gratuitously or at less than the going rate as to expect the men who operate the cars to work without pay or for less than a living wage. The man who invests his money in street railway stock is entitled to the prevailing interest rate for the use of his money equally with the man who makes his investment in the form of bonds. Indeed, in so far as the stockholder assumes the risk of having his principal impaired or entirely wiped out before the bonds are affected, he is entitled to something more than the bond interest rate. Public service companies, however, should be so managed and regulated that the risk to the investor and other speculative elements shall, so far as possible, be eliminated and the dividend return practically limited to the going interest rate. But if the possibility of speculative profit is removed it is essential that the investment be reasonably secure, or private capital will not enter the field. To sum the matter up, public service corporations do not afford a proper field for speculation or exploitation, but in order to enable them to furnish proper service and accommodations to the public their property values must be kept intact, and the payment of all costs of operation, including a reasonable interest rate upon legitimate investment, must be reasonably assured in order that needed capital may be obtained.

*Relations of Management and Employees**

By Dr. C. A. Lippincott
Studebaker Corporation
South Bend, Ind.

Dr. C. A. Lippincott

The Basis of These Relations Should Be Maintenance of Self-Reliance—Some Welfare Methods Do Not Do This—Maintenance of Self-Respect and Self-Reliance Is Most Important to Organization Personnel

MOST of the efforts made up to this time to bring management and employees into closer relation have been made along so-called lines of welfare work. Welfare work is an expression associated largely with charitable institutions. It has been a work of philanthropy rather than based upon actual business conditions and business necessity. This work has failed to succeed largely because it was contrary to two fundamental principles. In the first place, this work has not been ethically sound, and any relationship between employers and employees must be upon a sound moral and ethical basis before it has the possibility of success or continuance.

To begin with, welfare work invades the man's self-respect and no man can afford to accept gratuities of any sort or of any kind, however valuable they may be, for he pays too great a price for them. He pays the price of his self-respect, of his independence, of his self-reliance, of his manhood. The best thing that any of us have is our self-respect, our independence, our manhood.

I am opposed to it, too, not only because it breaks down moral fiber but because it destroys that individuality which we need in the citizenship of this great country. A nation which has too much done for its people inevitably becomes a weak nation, and in the hour of crisis will fail to function and fail to meet the supreme obligation.

There is another thing about these gratuities and this paternalistic form of government and that is they all tend toward socialism, toward communism, and certainly we are absolutely and utterly opposed to the development of socialism and communism in this coun-

*Abstract of address at annual convention of the American Electric Railway Association, Atlantic City, N. J., Oct. 8-11, 1923.

try. We don't believe in it; we don't want it. Our individuality is our most precious possession and that is the thing we are interested in preserving.

I am opposed to these welfare plans because they are economically unsound as well as ethically unsound.

We deal with four things in industry: men, material, machinery and methods of management. I frequently ask groups of foremen which of these four things is the most important in getting out production. I have been surprised at times to have them mention one thing and another, instead of mentioning at once that man is most important of the four in getting out production.

We have spent millions of dollars in trying to get foolproof machinery and then we have gone out to try to find a fool to run it. It must be conceded that we have had a great deal of success along that line.

Now the first step in any approach of management to men must be on the basis of justice, on the basis of simple, plain justice. Nothing can take the place of that. That is the first consideration when we come to consider the distribution of the profits, if there be any, of the joint enterprise of management and men, of capital and the public.

What is a fair distribution of the profit? What is a fair wage to the man in your employ? No man can write a universal formula for justice under all conditions. That is a problem which must be worked out in the individual industry, but the fundamental basis of our first approach to the employees must be on the ground of doing absolute justice.

The next necessity in any approach to men in solving the problem of management and men and their industrial relations is the question of attitude toward the man, of consideration for the man. I do not think that, after all, the problem that gives you the greatest trouble with your men is the question of wages or of hours. The greatest problem with the men, as I have found in the last four or five years (and I have interviewed literally thousands of workmen) is not so much the question of wages, but it is a question of the attitude of the managers toward the man while he is in their employ.

Today we are just beginning to recognize that the foreman is the key man in industry, although he has always been the key man, for whatever the managers, the presidents or the directors of the railway may desire in their attitude toward the employee, they are actually represented by what the foreman does to that employee. He is the point of contact. The foreman in the past has been largely a driver of men. His idea was to make the man go whether or not he wanted to go. I want to say to you that men all over this country today are resenting that kind of a method, and they should resent it. They are men and we want them to be men —self-respecting men. The man who can be driven is not the highest type of employee, but the man who can be directed, the man who can be led, is the man whom we want in industry today. Before we can get him, we must educate the foreman to be a director of men and not a driver of men; to be able to command, by his superior mental and moral power, all of the energy, and particularly the allegiance and co-operation of the men who are in his charge.

I believe that the employers of the United States can solve this problem of human relations if they are willing to concentrate upon it. I want to say to you, and to emphasize it positively, that the first move along this line should be made by the employer. The employer prides himself upon being the mental and moral superior of his workmen. Certainly he ought to be. Probably in some instances he may be their mental superior, though you will find many men of keen minds among your employees. But in too many instances he is not their moral superior. His principles are not as good as those of some of the men who are working for him. Unless we can take higher ground than they take, unless we can recognize that there has been a great deal of injustice in the world, and that it is up to us first of all to right that injustice, we will not remedy the situation.

"Oh," you say, "the man will not appreciate it." Suppose he does not appreciate it; he has had a great deal of training the other way. It is going to take some time to train him to realize and believe that he is a partner in the business, that capital and the employer are interested in his welfare, that they are interested in giving him justice, that they are interested in giving him a square deal, that they are interested in seeing that he has an opportunity to live as well as to let live, to live for himself as well as to live for others in this world.

That is the attitude which employment must take today. First, the attitude of justice, and second, the attitude of kindness, of a desire to treat the man who is under you, in your care, and whose destiny is largely in your hands, with kindness and to be fair and square to him under all conditions.

*Does Rubber Endanger the Rails?**

By Alfred Reeves
General Manager
National Automobile Chamber of Commerce

Alfred Reeves

Co-ordination of Trolley and Bus in the Field of Mass Transportation Is Urged—More than 1,000 Buses Are Now Being Operated by Railways in Auxiliary Service

MY THOUGHT is to draw a picture of the future—a picture which, it seems to me, will have to be realized if the American public is to enjoy the transportation to which it is entitled, and purveyors of transportation receive the reward which should go to those who properly perform a service so vitally necessary as the street transportation of America's ever-increasing and ever-restless population.

It seems proper to mention that the automobile industry, and those who use its products are probably the biggest taxpayers in this country.

Last year we paid $114,000,000 to the federal government in excise taxes, while annually we pay not less than $215,000,000 to the state in registration fees, personal property taxes and gasoline taxes (the latter now effective in thirty-seven states) with $6,000,000 more in wheel and privilege taxes, or a total of $335,000,000, which will probably climb to a total of $400,000,000 in 1923.

John E. Walker, former tax adviser to the United States Treasurer, states that of the $9,000,000,000 total tax burden of county, state and nation in 1921, more than $700,000,000, or 8 per cent, came from taxes levied against transportation—motor, steam and electric.

Few will deny that the trolley supplies the best form for mass transportation. It is generally agreed that transportation in big cities can best be served by monopoly, provided that monopoly is not abused, not overcapitalized, and is properly regulated by state authorities.

Unfortunately, monopoly in transportation in the past has been abused and the public has resented it. The newspapers gained circulation and politicians have gained popularity by shouting about it.

Our industry appreciates the hardships of the electric lines. There has been legislation far beyond what seemed necessary. There has been taxation almost to the confiscation point. There have been rulings that were almost impossible to obey. During the past five

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years, you have also been faced with a new form of transportation, which has in some cases added to your income by increasing the number of passengers traveling, but at other times has undoubtedly cut into your earnings to a substantial degree.

Low cost has not always been the answer, because the average American is ever ready to pay extra to save time and secure comforts. This is shown by the 10-cent fare paid by 55,000,000 people last year who patronized the Fifth Avenue bus service in New York. The public, I am sure, will gladly pay 8 or 10 cents for a special bus service even when the trolley fare is 5 cents, and it should be willing to pay extra where buses and trolleys are on a transfer basis.

The private passenger car, operated by its owner on the roads which he builds and pays to maintain, is with us now to the number of almost 11,500,000.

Combination of Trolley and Bus Advocated

Two questions present themselves:

1. If the buses had come first, how many of them could now be supplanted by trolley cars?

2. Does rubber endanger the rails?

The bus is a member of the transportation family, born of an emergency and certain to grow into a lusty youngster. It should be adopted as an ally of the trolley, which we shall always have, because the electric lines are still the best forms for use in handling mass transportation.

With the present congestion of traffic and cencentration of population, the trolleys cannot properly handle all street transportation. They cannot afford to build in sparsely-settled territories. Nor can the bus do it alone. Think how many would be required to supplant the trolleys which last year carried 15,000,000,000 passengers, which was 15,000,000 more than in 1921. A combination of trolley and bus seems to be the real answer.

In some instances it seems best for bus lines to be run independently, but in a broad sense it has appeared to us in the bus industry, that as experts the trolley people had a rare opportunity to enter the bus field and thus give the public complete transportation.

It is doubtful if the public will support bus lines conducted on a trolley basis. While not always possible to realize, the aim should be to give a bus seat to every passenger. This has been done successfully in New York, Detroit and Chicago, and we feel it can be done in other cities.

The public wants quick, safe, comfortable and economic transportation and cares not about the medium. Given the service, it will gladly pay a proper fare. The trolley company's interest in transportation lies in protecting its capital investment, securing new capital, caring for depreciation, returning proper dividends on securities, covering its general expenses, paying taxes and in meeting charges for paving between the tracks. The bus operator's requirements are about the same except as to the paving charges, but these are offset by registration fees, fuel taxes, and special impositions of one kind or another.

In certain fields of street transportation the trolley is supreme in efficiency and economy. In others the bus holds a similar position. This demands that the two forms be co-ordinated. The prime consideration, therefore, is to fix the fields of endeavor which each shall enjoy.

Many people have not appreciated that you trolley men have been taking the bus into your arms in order to round out a proper service for your communities. They express the fear that if you take over the buses, it will be for the sole purpose of bringing about their elimination. This is the one belief which the electric railway interests in this country must change if their entrance into this new field is to receive a proper welcome.

Service and not price is the real answer to transportation. The public is growing to believe that the trolley companies should manage the others, rather than irresponsible operators. But I fear they will patronize the so-called irresponsible operator if he succeeds in winning their favor by a sincere effort to give service at a low rate. By hesitating, trolley men have missed some golden opportunities, although it is not too late if they will enter the field in the proper spirit.

Most statements of electric railway men seem to hail with delight the inability of bus lines to score 100 per cent, when at short notice they have been installed in place of trolleys. I hear the difficulties of Bridgeport, Saginaw, Des Moines, and other cities; but, gentlemen, those operations were only growing pains and only partially indicated what can be done with buses. Most of these operations could not be considered conclusive measures of bus efficiency, because they were emergencies and lacked time for proper organization.

Rights of Those Now in Field Should Be Protected

May I emphasize another point?

We believe that the power of the trolleys to acquire, own and operate buses, should be exercised largely in new fields. It hardly seems equitable, except where there has been illegal or unjust competition, that they should be allowed to destroy bus transportation in the hands of others. In all cases where men have taken the risk in order to build up a bus transportation business, equity demands that they be permitted to retain that business if it is not adverse to public welfare, or that there be paid for the business a sum which is not measured by the sum of the second-hand value of the equipment, but the value of a going concern which pioneered a development that has proved of benefit to the public.

One could give a long list of happenings in this country of late that shows the tendency toward bus transportation. The most outstanding feature, of course, had to do with the operations in Newark during the recent trolley strike, where some 11,000,000 passengers were carried during August by the bus lines.

One of the largest bus operations by an electric railway is that at Milwaukee, Wis., where more than seventy-two buses are now in service. Wilkes-Barre, Pa., has bus service of from sixty to seventy-five units, handling approximately 4,000,000 passengers annually.

West Coast Has 100 Intercity Buses

The most noteworthy move by one company is the action of the Pacific Electric Railway and the Los Angeles Railway Corporation at Los Angeles and Pasadena, Cal.

After a survey of the operations of other electric lines and the independent bus transport service being given in all parts of the country, these two companies jointly have secured a long-term franchise for bus operation in these two cities and have placed an initial order for almost 100 buses of the twenty-five-passenger type, and their investment in equipment, garages, etc., will total approximately $1,000,000 immediately, with every prospect that this will be doubled before the end of this year.

At Baltimore the United Railways & Electric Company has been operating buses for several years, and has extended its service within the past year. At Newburgh, N. Y., and at Everett, Wash., the electric railway lines have abandoned their electric service and taken up bus operation instead. At Youngstown, Ohio, the Pennsylvania-Ohio Company now has an installation of buses totaling thirty-one, of which about one-half are of the de luxe type. Since inaugurating this service, about a year ago, the traffic on the lines, combined bus and electric service, between Warren and Youngstown, 15 miles, has increased 33⅓ per cent.

We are not yet sure of the proper types for the various kinds of bus service. Some bodies have been built entirely too wide and without respect for the rights of others on the highway.

We feel our industry is in accord with yours, so far as it relates to state supervision of common carriers. More than two years ago, we declared that control over motor vehicle common carriers, if deemed necessary, should be placed in existing state commissions and that as a prerequisite to operation the owner should be obliged to obtain a certificate of public convenience with the proviso that lines in actual operation shall prima facie be regarded as necessary.

Our declaration called for liability insurance, with special or extra fees utilized for highway maintenance, and advocating legislation to enable steam railroads and trolleys to own and operate the motor vehicle in conjunction with their regular line of business.

My faith in the good sense of American business men, together with your kindly reception of a representative of the automobile industry, leads me to believe that this meeting marks a new era in local transportation in this country.

American Association Proceedings

Growth and Development of the Industry Are Shown by the Scope of the Papers and Discussions —Among the Broader Questions Considered Are Valuation, Taxes, Commission Regulation and Co-ordination of Transportation Facilities

THE opening session of the American Electric Railway Association was called to order at 10 o'clock on Tuesday morning by President C. D. Emmons, president United Railways & Electric Company, Baltimore. Before the president had proceeded far into his address the meeting room was well filled with an enthusiastic audience. President Emmons' address appears on another page in this issue.

In reporting for the executive committee, Executive Secretary J. W. Welsh said that this report consisted of a review of the several executive committee meetings during the year. This was received and will be included in the records. Mr. Welsh gave a brief review of his own report as follows:

Reports of Secretary and Treasurer

He stated that the association year, which comes to a close with this convention, has been one of growth and development in various activities. Possibly the most noteworthy work done has been that of the information bureau. A total of 11,812 requests have been answered during the year, an increase of approximately 16 per cent over last year, and greater than any previous year in the association's history. Of the member railway companies, 81 per cent are consistent users of this service. The need for it is self-evident, as it is a clearing house for information through which companies may secure at one central point information which would otherwise require communicating with a great many companies.

Mr. Welsh pointed out that it is now generally appreciated that the association maintains a complete, up-to-the-minute file on problems of major importance, such as wages, relations with labor, fares, commission regulation, financial statistics, etc. It may not be generally known, however, that a much wider range of subjects is constantly in review and under investigation by the association headquarters staff. As examples, he cited the statistical information relating to motor bus operation, now of great interest to every electric railway company. A notable report issued by the bureau covered a summary of public utility laws throughout the country. This is the only report available on this subject from any source made during the last ten years, and the need for it has been clearly indicated by the fact that copies have been requested not only generally throughout our industry but by public libraries and other national organizations and the public utility commissioners themselves.

The services of the advertising section have been taken advantage of by a much larger number of companies and particularly by the manufacturer members. This work is supported by the committee of one hundred, and a campaign for funds covering another two-year period was recently made and consummated in six months. Both electric railway and manufacturers are realizing the need of educating first their own employees in the problems of the industry so that they may pass the information on to railway patrons. An important activity in this direction which has been initiated during the year has been the awakening of the manufacturers to a realization of their opportunity in educational work among their own employees. The personal work of E. F. Wickwire, chairman of this committee, stands out as a real accomplishment, he said.

The secretary said that the association magazine *Aera*, has won recognition in the field of public utility periodicals, quite aside from its increasingly valued reception by electric railways. In this connection he reported that during the year an increase of 20 per cent in advertising rates became effective, and this, together with an increased use of the advertising pages by manufacturers, has resulted in a substantial increase in the magazine's revenue.

The secretary also referred in his report to the establishment of the Charles A. Coffin Foundation, which he said would serve as a stimulating influence in improving electric railway service and in broadcasting the achievements, to the end that the public generally will appreciate the efforts of electric railways toward modernizing their service and equipment.

The secretary referred to the work of the Engineering Association during the year and mentioned the complete revision of the Engineering Manual, which has been made. The work of the other associations was also touched upon, as was also that of the Washington office.

As an appendix the secretary's report contained a complete list of the membership, together with a tabulation of committees and number of meetings held by each, and a summary of the changes in membership.

Barron G. Collier, New York, reported as treasurer on the financial status of the association as of July 31, 1923, the date of the last official audit, saying that in the printed proceedings of the convention the audit of Nov. 1 will be included to bring the figures up to date. Mr. Collier said that the total revenue of the association for the first nine months of the present year were $224,180 and total operating expenses $120,813. This leaves a net income of $103,367. Deductions of $10,000 for the welded rail joint committee and $4,117 for the joint fuel committee were made from this, leaving a net surplus of $89,249. The association books as of July 31 also carry a fund of $21,542 belonging to the welded rail joint committee. This money was raised entirely by contributions to the committee by the association and others interested in its and is being handled for the committee by the association.

Mr. Collier pointed out that the surplus indicated in the above figures will be materially reduced by the end of the association's fiscal year.

At this point President Emmons appointed as members of the resolutions committee A. W. Brady, J. G. Barry and H. W. Blake.

Finance and Policy

J. H. Pardee, New York, read the report of the committee on finance, of which R. P. Stevens and J. G. Barry are also members. Mr. Pardee briefly reviewed how the committee has kept close supervision of the expenditures of the association during the year and advised with the executive secretary on all matters having to do with the handling of the association finances. He said that while the association expenditures are greater than for last year, this is to be accounted for largely through the increased activities of the association, as set forth in the report of the executive secretary. All accounts of the association have been audited quarterly by a firm of certified public accountants. Mr. Pardee said that in the opinion of the committee the financial affairs of the association are conducted efficiently and in accord with modern business methods. The committee is satisfied that the association is fully protected in all of its financial transactions. From present indications the receipts for the current year will be approximately the same as for last year, while it is expected that the total of all expenditures and contributions will approximate 25 per cent higher.

Britton I. Budd, Chicago, presented the report of the committee on policy. He said that two matters calling for action by the committee had come up during the past year. One was the proposed organization of a medical and surgical section of the association, through which physicians and surgeons employed by electric railways might exchange experiences for the benefit of the industry. After careful consideration, the committee disapproved of the suggestion. The committee felt that

opportunity for exchange of ideas could be afforded through the creation of a joint committee of physicians and surgeons affiliated with the Transportation & Traffic Association and the Claims Association. This recommendation is being considered by the executive committees of the affiliated associations.

The other matter had to do with the participation of the American Electric Railway Association with other utility associations, the railroads and communication companies, in the formation of a co-operative committee to study inductive co-ordination. The committee on policies recommended that all associations participate in this study.

The committee gave consideration to the formulation of a brief statement of principles, which might be used on letterheads and in other ways. The 1914 code of principles, while excellent, is so lengthly that little practical use of it is made. The committee reported progress on this item.

The committee noted with gratification that the courts and public regulatory bodies are adopting the principle enunciated at the last convention of this association, namely, that public transportation is a natural monopoly and that the established transportation companies are entitled to public protection from competition; that is, duplicative of service, destructive of stability and detrimental to the public interests. This principle has not yet been generally adopted, but decisions in Illinois, New Jersey, Maine, Maryland, Connecticut and other states show that public realization of the essential character of electric railway service is becoming keener and the commissions and courts are reflecting this public sentiment and pointing out that when the public regulates and controls a utility it is under obligation to protect it from impairment. The committee recommended that the association reaffirm this principle and continue to assist member companies and the public with all available information regarding points at issue.

The committee said also that the association might well reaffirm its policy on public ownership. While some notable experiments have been made in this phase of socialism, the results so far obtained strengthen the conviction that the public can be better served under private ownership and operation. Our energies should be directed toward giving the public the best service possible, which is the most effective way to combat the agitation for public ownership and operation. Where public ownership and operation have been tried, the public has learned that it is not possible to get something for nothing, that the rate of fare must depend on the cost of providing the service. The committee recommended that the association continue its efforts to educate the public on this question, as the association believes the doctrine of public ownership is in conflict with the principles upon which our government is founded.

C. L. Henry, Indianapolis, as chairman, presented the report of the committee on national relations, which follows in abstract:

National Relations

As the attention of both houses of Congress was taken up almost entirely by matters of more public concern, but little transpired before any of the committees of either house that was of special interest to our industry or that called for any special attention on the part of the committee.

Britton I. Budd
President-Elect A.E.R.A.

From the present outlook, judging by the discussions all over the country, through the newspapers, in public addresses and otherwise, the coming session of Congress, which will meet in December, will consider many matters of very grave importance to our industr, as it represents a part of the great transportation industry of the country which will call for close attention to the end that the electric railways may not suffer by any legislation that may be enacted.

As heretofore in such cases, the discussions will center around the steam railroad systems of the country and whatever legislation is considered or enacted will primarily be directed toward the problems involving the steam railroads. However, as many of our companies are interstate carriers and, as such, subject to the jurisdiction of the Interstate Commerce Commission, and now subject to many of the provisions of the transportation act of 1920, which will in all probability be amended in many respects, unless careful attention is given to the matter, the electric railways in the country will be embarrassed in legislative provisions from which they should be entirely exempted.

The legislative battles will, in our opinion, be centered around the transportation act of 1920. From many of the provisions of this act electric railways are either entirely or in a measure exempted and we feel that in not a single instance should there be any change where such exemptions are written.

The Interstate Commerce Commission in its report for 1922 has recommended "that section 20-a of the interstate commerce act be amended to include within its provisions electric railway companies engaged in the general transportation of freight." This section is the one giving to the Interstate Commerce Commission control of the issuance of stocks, bonds, etc., of interstate railways and the Congress exempted electric railways from the provisions of the section.

On account of the various questions arising in such matters, the committee is very strongly of the opinion that the jurisdiction over the issuance of stocks, bonds and other securities by electric railways, should be left in the hands of state commissions instead of being placed under the control of the Interstate Commerce Commission.

Since the last annual meeting of the association the attention of the committee has been required by various matters in various forms before the Interstate Commerce Commission. It was represented at the original hearing held by the Interstate Commerce Commission to discuss the provisions of the proposed interchangeable mileage act and filed with the commission a brief on the subject setting forth the attitude of the electric railways toward the proposed legislation. The final order of the commission exempted generally electric railways, but issued a supplemental order including several electric railways which had requested to be included in the commission's original order. Before anything was done in the way of carrying out the provisions of the commission's order in the premises, the whole matter was held up by an injunction of the court and has not even yet been tried out.

In December, 1922, the committee was represented again before the Interstate Commerce Commission on the "application of the Western Pacific Railroad for authority to acquire control of the line of the Sacramento Northern Railroad," etc. This case was of importance to electric railways generally as it involved the question of whether or not the Sacramento Northern Railroad would be "operated as a part of a general steam railroad system of transportation" in the event the Western Pacific Railroad acquired control thereof. The committee supported the contention of the Sacramento Northern Railroad that it should not be properly construed as being operated as a part of a general steam railroad system of transportation.

In January the chairman of the committee, along with Mr. Welsh, secretary of the association, appeared on invitation of the commission before the Federal Coal Fact-Finding Commission and had a long conference with the commission, during which all the features of the coal situation, so far as they related in any way to our industry, were fully discussed. Of course, the com-

mission did not make any statements which would indicate what it intended to do, but it did—all of the members—exhibit the most interested and friendly feeling toward our industry.

During the annual meeting of the association at Chicago last October the chairman of the committee was authorized to appoint a sub-committee of five to have full charge of all matters relating to the disposition of questions arising under section 15-a of the interstate commerce act, of which sub-committee the chairman of this committee was to be chairman. The chairman of this committee thereupon appointed the following persons on such sub-committee: C. D. Cass, A. W. Brady, B. C. Cobb, W. V. Hill and Britton I. Budd.

Soon after at a meeting of the sub-committee it was agreed with the Chicago, North Shore & Milwaukee Railroad that that company should prepare for presentation to the Interstate Commerce Commission a brief maintaining that the company was not embraced in the provisions of section 15-a of the interstate commerce act. As soon as this brief was prepared it was submitted to the members of the sub-committee and approved by them in every respect. At the time it was filed with the Interstate Commerce Commission the sub-committee also filed with the commission a short brief asking to join with the Chicago, North Shore & Milwaukee Railroad in the question presented by the brief, asking also, as did the railroad company, for an oral hearing on the question. Matters remained without action for some time, when the Chicago, North Shore & Milwaukee Railroad was notified by the commission that until further order it need not take any further steps in the matter. This was understood to be equivalent to a finding by the commission that the contentions of the Chicago, North Shore & Milwaukee Railroad were approved by the commission. Since that day nothing has been heard from the commission in any way regarding the status of the company under section 15-a.

As the chairman of the committee has by request of various companies been made their representative in Washington before the Interstate Commerce Commission, there have been since the last annual meeting of the association a great many communications addressed to these companies by him relating to matters before the commission, but there is nothing among them which calls for a general notice.

It should be borne in mind by all representatives of electric railway companies that the Washington office can be called upon by members of the association in all such matters and will gladly render every possible service.

The report was signed by W. R. Alberger, P. S. Arkwright, H. G. Bradlee, Arthur W. Brady, C. D. Cass, F. C. Chambers, B. C. Cobb, S. M. Curwen, J. H. Hanna, T. N. McCarter, John W. Shartel, H. B. Weatherwax and Charles L. Henry, chairman.

Reports were read of the committee of one hundred and joint committee of the national utility associations. Abstracts follow:

Committee of One Hundred

The committee reports that in accordance with a previous agreement entered into with you, it has during the past year financed the work of the advertising section of your association. Details of this work have been under the direct supervision of the association's committee on publicity, which will submit a separate report. The committee of one hundred's report will be confined strictly to the financial phases of the situation.

The fund which was raised in 1921 for carrying on the work of the advertising section was practically exhausted on Jan. 1 of the present year, so the committee of one hundred inaugurated a new campaign for funds. This campaign now is practically completed, and the amount raised assures the carrying on of the work of the advertising section at the present rate of expenditure until some time during the latter part of 1924.

One hundred and seventy of the 641 railway companies asked to contribute to this fund contributed, as did also seventy-six of the 245 manufacturer companies and ten of the sixteen associated companies. Out of a total of 902 organizations solicited, 259 contributed to the fund. The first appeal for funds was sent out on March 5, 1923, and the last contribution was received on Sept. 4, 1923.

Henry R. Hayes, secretary and treasurer of the committee of one hundred, has supervised the expenditure of moneys, and a complete record of funds expended has been received by the chairman and is on file at Mr. Hayes' office and also at the association headquarters, where it is available at all times to contributing members interested in the work.

The report was signed by Guy E. Tripp as chairman.

National Utility Associations

In the organization of this committee are represented three national utility associations, viz., the National Electric Light Association, the American Gas Association and American Electric Railway Association. Its activities are handled through the following sub-committees: Federal taxation, P. H. Gadsden, chairman; public utility fuel, J. W. Lieb, chairman; public utility financing, S. Z. Mitchell, chairman; public information, M. H. Aylesworth, chairman.

On the subject of federal taxation the committee has kept closely in touch with the proposed national legislation, particularly the movement to abolish tax-exempt securities. Early in the year a letter was sent to member companies calling their attention to the "Green resolution" for a constitutional amendment. Arrangements were made for mailing extracts from the Congressional Record containing letters from Secretary Mellon and an article by Professor Seligman to member companies. The membership were again advised when the Green resolution came before the Senate judiciary committee on Jan. 23. At the annual meeting of the Chamber of Commerce resolutions were presented on behalf of this association and the American Gas Association favoring the elimination of tax-exempt securities. As a result of this the United States Chamber of Commerce has referred the matter to its committee on taxation for special consideration. In general this committee has also had referred to it questions dealing with valuation and has a special committee engaged in the consideration of this subject.

The work of the joint fuel committee under Mr. Lieb has been completely covered in the printed reports covering the establishment of a Washington office during the coal emergency and the assistance which was rendered to all public utility companies in securing coal at that time.

The work of the committee on public utility information was carried on by co-operative action between the directors of publicity of the three national associations and by maintaining close contact with the state public utility information bureaus. The report was submitted by Randal Morgan.

J. N. Shannahan, national councillor United States Chamber of Commerce and president Newport News & Hampton Railway, Gas & Electric Company, praised the work of the national chamber and urged all to take an active interest in its work. The more railway men, he said, who attend its annual meeting as national councillors or delegates from their local chamber the better.

Transportation Needs

P. H. Gadsden, United Gas Improvement Company, then gave an oral report of the study of transportation now being conducted by the United States Chamber of Commerce. He said that in January of this year, following a conference called in New York by President Barnes of the United States Chamber of Commerce to consider the subject of transportation, it was decided that the national chamber should make a study of all transportation agencies through five committees. These committees are, respectively, on (1) the relation of the railroads to government, (2) consolidation of railroads, (3) rates, (4) relation of the motor truck on highways to other forms of transportation, (5) water transportation. Of these committees, electric railway companies are interested particularly in committee 4. This committee, of which Mr. Gadsden is a member, soon found that the basis of the question being considered was regulation. The steam railroads and the electric railways were operating under regulations imposed by statute, and it was necessary to know what position the people of the United States wanted to take in regard to the regulation of the motor

truck. Hence, a sub-committee on regulation was appointed, with Mr. Gadsden as chairman, and while the speaker could not give the conclusions reached by that committee, he was permitted to say that the representatives on that committee of the motor truck interests had shown a willingness to approach the subject of motor trucks when engaged as common carriers in a spirit of co-operation. The next step was to investigate the subject of taxation, not only from the standpoint of the amount of taxes assessed on the property values of each industry, but also the extent to which each of the carriers was being required to act as a tax collector. As regards this latter requirement, the speaker said that the electric railways led all the others. He also spoke of the very valuable assistance given to the committee.

The work done by all the various committees is now complete and their reports are in the hands of the president of the national chamber. The next logical step would be the appointment of a general committee by the chamber to consider these reports and prepare a report representing the mature judgment of the people of the United States.

Without attempting to forecast in any way what this report would be, the speaker felt that he could say that he believed it would be of great value to the industry in clarifying the proper position of the different transportation agencies. It would not be prepared with the idea of defending or supporting any particular interest, but absolutely with the purpose of determining which system or combination of systems was best for the people of the United States. From that standpoint the electric railways have nothing to fear.

At the conclusion of Mr. Gadsden's talk, reports were presented by the committees on trackless transportation, uniform motor vehicle regulatory laws and construction and maintenance of highways for motor vehicles. These reports follow in abstract:

Trackless Transportation

The experience of the industry during the past year has been to confirm the findings of the committee contained in its 1922 report.

The answers made to the questionnaires sent out this year by the committee of the Transportation and Traffic Association indicate that the adoption of bus service by electric railways has been of a character and for the reasons set forth in our 1922 committee report. This experience in general confirms the fact that bus operation is on the average more expensive per bus or seat-mile than electric car operation, but that the higher unit cost is justified where traffic is very light.

The committee's conclusion last year that "the possibilities of development of transportation with railless vehicles should interest the industry greatly" has been justified by the fact that in the intervening year (from June, 1922, to June, 1923) the number of electric railway companies to adopt buses for part of their service has increased from forty-four to ninety-five and the number of buses involved from 300 to 925.

The committee on bus operation of the Transportation and Traffic Association has prepared an excellent report this year, giving the results of a study of the extent, costs, reasons for and methods of bus operation by electric railway members of the American Electric Railway Association.

It is believed that the same social and economic forces which have already caused the adoption of auxiliary bus service by ninety-five electric railways in this country will continue to expand their use in the future and that the association should arrange for the coming year to continue the study of the operating, engineering and accounting details of bus service.

The constantly growing use of bus service by electric railway companies gives this association a direct and vital interest in the questions of special taxation and traffic regulations affecting motor vehicles in general. In this connection co-operative action with the automotive vehicle associations is desirable.

Another feature which should be of interest to the association is the provisions of state laws and the attitude of state commissioners as to the regulation of competition with electric railways or the operation of buses by electric railways.

In its last report the committee stated in substance that there was a field for the economic use of buses to supplement the electric railway service in the cities of this country, either by inaugurating bus service on lines of light traffic, where track reconstruction was the other alternative, or by using buses for extending service into new territory where the expected traffic was not great enough to warrant the investment in tracks for railway service.

The committee also concluded that for handling mass transportation the electric railway is the most reliable and economical method now known, but that on account of the availability of buses for the special conditions above stated, the electric railways should be alive to the possibilities of bus operation—both in order to handle all the transportation needs of their community and by so doing to prevent wasteful competition by others entering the field due to the electric railways failing to utilize buses where the need for them exists.

Experience has shown that the motor bus amalgamates well with street railway transportation. It decidedly helps in providing a unified service in which the various companies are trying to provide street transportation. The menace of the jitney, although still present, has grown less. Particularly has it become apparent during the past year that after the street railway has installed motor bus operation the public has come to realize how much more satisfactory is the service than that previously rendered by various irresponsible, poorly organized jitney companies.

This has been largely due to the adoption by the street railways of the best constructed and designed buses to be found on the market. They have been well maintained, cleaned, painted and run on schedules of frequent and evenly spaced headway from early in the morning until late at night. All this has been a welcome change in many communities.

The automotive industry has progressed in the past few years and is now developing passenger carrying vehicles of improved design. We are advised that the larger manufacturers of buses have appropriated large sums for the further improvement of bus design for passenger transportation service. There is a field in transportation in which these vehicles can furnish satisfactory service and traction officials should not allow an antagonism, aroused by jitney competition, to cause them to lose sight of the fact that it is their duty to supply transportation in the territory in which they are operating, and if extensions are required or present high costs of reconstruction necessitate the abandonment of any track, they should be quick to consider trackless transportation. The electric railways must keep pace with the development in the transportation field if they expect to continue to be the recognized distributing agency of the transportation commodity in their territory.

Failure on the part of traction companies to recognize and meet the above described situation will result as it has in the past in encouraging independent operators to enter the field and meet these service requirements. It is better for the traction companies and the public to realize fully that duplication of service is detrimental in that it results in a higher cost for transportation, making it desirable that the traction companies shall remain the transportation agency of the community, giving the public what it wants if the request is reasonable and the need apparent. Duplication of service is always ultimately paid for by the passenger and under proper regulation it is to the interest of the passengers that highway transportation shall be conducted as a unified whole.

From the results of experience in operating trackless transportation so far it must be appreciated that higher operating costs per seat-mile with buses justify a higher rate of fare in proportion, in compensation for any expedited service which may be possible by their operation.

Transportation is lacking in some places where lines have been abandoned on account of high costs of operation or of track reconstruction. The public formerly served by these lines feels that an injustice has been done the communities. Not only where lines have been abandoned but also in many local and country sections where highway transportation has never existed there is a growing demand for some service, and this demand is constantly increas-

ing where communities are stretching out into new territory and going through a process of natural growth. As the recognized distributors of transportation, the traction companies should be prepared to supply this lack. It must be realized, however, that it is incumbent upon sparsely settled districts to assist by caring for deficits until the service becomes self-supporting. Never again must the transportation companies and the riding public, who eventually pay the bill, be imposed upon for the purpose of land development exploitation.

The committee has five members who have served at least two years and whose companies are in the business of operating motor buses. In fact, of the thirteen members, ten represent organizations that have inaugurated motor bus operation.

The members of the committee are convinced that the motor bus has come to stay. It is a business proposition, not a theory. In fact, the use of buses where feasible is an established policy with most of the members of this committee. Committee reports have been made in many associations of street railway men and in the automotive industry. Technical journals have compiled statistics of every description. Two conclusions seem to be reached by reading these data and these reports, and from the committee's experience:

1. The electric car running on rails is still the most essential, reliable and economical method of urban, suburban and interurban travel, considering the transportation problem as a whole and especially for mass transportation. This condition arises largely from the fact that the operation costs per passenger are higher for bus operation than with electric cars, and from the further fact that it is not possible to handle mass transportation with buses.

2. The motor bus is needed to feed and supplement our car lines, to open up new territory; in fact, to complete, round out and make whole passenger transportation on the highway.

As stated by this committee in the past, it is our duty, as public servants charged with the responsibility for conducting the highway transportation in our respective communities, to adopt every feasible unit or method for furnishing this service.

The report was signed by J. H. Alexander, R. E. Danforth, B. J. Fallon, George Keegan, T. J. McGill, H. A. Mullett, D. W. Pontius, G. T. Seely, Claus Spreckels, R. A. West, H. B. Potter, vice-chairman; C. W. Kellogg, vice-chairman, and H. B. Flowers, chairman.

Uniform Motor Vehicle Regulatory Laws

During the winter just past there have been in session forty-five State Legislatures, and legislation affecting the operation of motor vehicles for the transportation of passengers and freight on the public highways has been passed in twenty-two states, which is of varying degrees of importance. Some of the states, such as Iowa and Oklahoma, have passed general, full and complete regulatory laws affecting motor vehicle common carriers. Other states have merely amended certain sections of their present laws. In seventeen states a gasoline tax has been imposed upon all motor vehicles whether common carriers or not, making a total of thirty-six states now having such a tax. Ten states have increased their gasoline tax, the amount of the increase varying from 1 cent to 2 cents per gallon. The gasoline tax runs from 1 cent to 3 cents per gallon, the lower figure being the rate of taxation in the states of Arizona, Connecticut, Kentucky, Louisiana, Maine, Mississippi, New Mexico, North Dakota, Texas and Vermont and the higher figure the rate in Florida, Georgia, Oregon, South Carolina and Virginia. In seven states there was no attempt made to pass legislation affecting motor carriers. In six states legislation was attempted but failed. In the state of Wisconsin a bill has been drawn and reported favorably by the committee, which remains for the action of the Legislature.

There remain almost as many plans of taxation of motor vehicles and motor vehicle common carriers as there are state-taxing bodies. The complete plan of taxation per ton-mile of travel over and along public highways, as suggested by this committee in its report at the last annual meeting, was adopted in one state (Iowa), with the exception that the rate of taxation suggested was changed from 1 cent and 1½ cents to ⅝ cent and ¾ cent respectively. In one state (West Virginia) the taxation of motor vehicle common carriers is based on a prescribed sum per passenger seat-mile for passenger-carrying vehicles, such prescribed rate being higher for heavier motor vehicle units and lower for lighter units.

Plans of Taxation Chaotic

In general, however, the plans of taxation remain chaotic, unscientific and unremunerative. As a rule the taxes in all states are much lower probably than the cost of maintaining highways damaged by motor vehicle common carriers. Until this situation has been corrected the public will be subsidizing the operation of these new transportation units.

In all legislation of a general character passed during the last winter, the requirement of a certificate of convenience and necessity before a motor vehicle common carrier can operate has been enacted into the laws. It is manifestly conceded by all parties concerned that such requirement is fundamentally sound. Also, in all states passing general motor vehicle legislation within the past year, liability insurance bonds to protect the public against injuries and damages have been required. This insurance feature, therefore, in addition to the certificate of convenience and necessity feature has apparently been accepted as basicly necessary in any effective motor vehicle regulatory law. There has been some divergence of ideas in the application of these two fundamentals, the insurance required in some states being somewhat less than in others and the character of the insurance being somewhat different. Certificates of convenience and necessity, while required in all new general laws, are issued under very stringent conditions and regulations in some states, and under less close requirements in other states.

There are a few fundamental ideas that must be secured in any new laws in order that regulation may be effective. First, certificates of convenience and necessity, making it unlawful for any motor vehicle common carrier to operate or commence operation until some state authority has consented to the operation of a common carrier by motor vehicle. Second, sufficient power lodged in some department of the state to supervise and regulate the rates, service, accounts, and safety of operations of every motor vehicle common carrier. Third, adequate insurance to protect passengers and public from injuries and damages caused by the operation of motor carriers. Fourth, a compensatory tax which will produce such an amount as will repair the damage done to highways by motor vehicle common carriers. Until a better plan has been devised, it is the opinion of this committee that there should be urged upon the public the necessity of taxing motor vehicle common carriers on the basis of the amount of use of the highways. To secure complete compensation for the use of highways by motor vehicle common carriers, every state should be urged to study this question on the basis of reducing the information to the point of how much damage a ton mile of travel does in cents and fractions thereof to each type of highway commonly in use. When that has been determined by investigation, the rate of taxation per ton-mile of travel can be accurately fixed. Until it has been determined the principle involved in the application of the ton-mile tax should be urged and the rate set at a tentative figure that will be certain to be sufficient. This may be done without particular detriment, because such rate may be changed from time to time as the studies advance without it affecting the sound principle of the ton mile tax. It is vital to all concerned that the present public subsidy in the shape of uncompensated use of roads be withdrawn from motor vehicle common carriers. Every taxpayer is interested in this and every other form of transportation is also interested in it. When such public subsidy has been withdrawn the rates charged on this new form of transportation must necessarily be fixed at such a point as will compensate their use of highways, and when this is done the present unfair and indiscriminate competition will be substantially curtailed.

It is gratifying to note that the draft of uniform motor vehicle law as proposed by the committee at the last annual meeting has been more or less

used in many states in framing new motor vehicle common carrier legislation. Many parts of such laws have been written quite largely from the tentative draft adopted by this association at its last annual meeting.

The report was signed by A. W. Brady, Ralph R. Bradley, David Daly, D. W. Pontius, B. E. Tilton, H. E. Chubbuck and C. D. Cass, chairman.

Construction and Maintenance of Highways for Motor Vehicles

The committee on cost of construction and maintenance of highways for motor vehicles was appointed in the year 1922, and sent to the electric railway company in each state located in or near the capital a questionnaire requesting certain data. The replies were not received in time for the committee to report at the 1922 convention; therefore, the committee was continued for the year 1923.

Replies to the questionnaire indicated that many states have not kept authentic records of the cost of construction or maintenance of their improved state highways and there was practically no record of costs in connection with county highways. The committee's information also indicated that many state highway departments which have not kept detailed cost records are starting to keep construction and maintenance costs which should be available in the future. Data on county highways probably will not be available for some years to come.

An examination of the tabulated data received by the committee shows that, with few exceptions, the costs of highway construction and maintenance have increased steadily from 1917 to 1921, due to the construction of concrete, stone-block or brick pavement types of road instead of macadam and to the recognized increase in cost of labor and materials of all kinds. Obviously, costs of highway construction and maintenance will vary widely in different states due to the differing climatic conditions and soils, types and widths of highways, varying costs of labor and materials and density and character of traffic.

In order to determine the annual cost to any state of its improved highways it is, of course, necessary to know the total amount of money invested in highways from which the interest, depreciation and other fixed charges thereon can be obtained. These charges, to which should be added the annual maintenance costs, will represent the total annual highway expense. The determination of the depreciation charges requires knowledge of the estimated life of each type of highway for the character and density of the vehicular traffic accommodated by it. Information of this character is not now available, although elaborate tests are being made by the U. S. Bureau of Public Roads, various state highway departments and educational institutions.

The committee presents in tabulated form the data received showing partial figures of the construction and maintenance costs per mile for twenty-seven states, together with the mileage for the years 1917-1921 inclusive. The report says that it is realized that this information is not complete and in some instances may be inaccurate, but it gives a fair idea of average construction and maintenance costs for the years indicated. Figures as to motor vehicle registration and revenues collected by the U. S. Bureau of Public Roads are also included.

The conclusions of the committee are: That there now is a noticeable absence of accurate data on highway costs; that there is need of definite action on the part of the several states to obtain accurate cost data on the various types of road in use, in order that an equitable plan of taxation may be devised to meet the expense incurred through the increasing use of highways by motor vehicles.

The report was signed by J. S. Bleecker, C. M. Cheney, W. F. Graves, Samuel W. Greenland, E. C. Johnson, E. P. Roundey, J. N. Shannahan, H. M. Steward, and W. J. Harvie, chairman.

Co-ordination of Electric Railway and Bus Transportation

President Emmons then announced that the rest of the session was to be devoted to a consideration of the subject of co-ordination of electric railway and bus transportation. Papers were read by Alfred Reeves, general manager Automobile Chamber of Commerce; L. S. Storrs, president Connecticut Company, New Haven, Conn., and D. W. Pontius, vice-president Pacific Electric Railway, Los Angeles, Cal. These addresses will be found elsewhere in this issue. The meeting then adjourned, after Secretary Welsh had announced that the association had received from the United States Department of Commerce copies of its recent "Survey of Business." Copies of this survey were available to the delegates at the convention.

Wednesday's Session, A.E.R.A.

PRESIDENT EMMONS called the second session of the American Association to order promptly at ten o'clock Wednesday morning. The first order of business was the report of committee on nominations, which was presented by J. H. Pardee, chairman. The association acted on the report, electing the following officers for the ensuing year.

President, Britton I. Budd, president Chicago, North Shore & Milwaukee Railroad and Chicago Elevated Railroads.

First vice-president, J. N. Shannahan, president Newport News & Hampton Railway, Gas & Electric Company, Hampton, Va.

Second vice-president, F. R. Coates, president Toledo, Ottawa Beach & Northern Railway, Toledo, Ohio.

Third vice-president, W. H. Sawyer, president East St. Louis & Suburban Railway, East St. Louis, Ill.

Fourth vice-president, R. P. Stevens, president Republic Railway & Light Company, New York.

Treasurer, Barron Collier, president Barron G. Collier, Inc., New York.

The new members of the executive committee are: J. H. Hanna, vice-president Capitol Traction Company, Washington, D. C., and H. B. Flowers, president New Orleans Public Service, Inc., representing railways, and E. F. Wickwire, secretary Ohio Brass Company, Mansfield, Ohio, and Cornell S. Hawley, Consolidated Car Heating Company, Albany, New York, representing manufacturers.

J. P. Barnes, as chairman, presented the report of the committee on valuation. In view of the great importance of this report, it will be published in full in the JOURNAL next week.

The valuation report was discussed by H. M. Brinckerhoff, Prof. A. S. Richey and J. A. Emery. Mr. Brinckerhoff called attention especially to the reference of the committee report to the yardstick method of making valuations. He stated that the form of valuation report and the method of proof are of great importance. We have reached the point where valuation engineers have had sufficient experience so that they ought to have somewhat standardized methods. However, he stated, there is very great diversity of methods, both with engineers and with commissions. It should be possible to state the physical facts so that these would not have to be brought out in testimony in hearings.

With the knowledge we now have of costs, it ought to be possible quickly to prepare a rough estimate of value with sufficient degree of exactness to make it acceptable in formal proceedings. As bearing on this contention, he cited the fact that a building contractor will figure the exact cost of a few of the major items and estimate the rest on the basis of cubical content, and he succeeds in doing business on this basis. There is no need to go into such great detail with utility valuation work. He stated we ought to be able to get engineers to agree on many factors and thus make it possible to get an estimate easily, which would be near enough for practical purposes. This ought to be driven home to both engineers and lawyers.

Mr. Emery called attention to the fact that the committee's report was unanimously agreed to by all of the members and commented that at the beginning of their work this was hardly thought to be possible. The principal controversy nowadays is between the reproduction and the prudent investment methods of valuation. Since the opinion of Justice Brandeis in the Southwestern Bell Telephone decision of the United States Supreme Court, a

good deal has been made of the investment method. Mr. Emery pointed out that this would mean that if a company had invested $3,000,000 before the war in a piece of property and $7,000,000 since then, it would have a total valuation of $10,000,000. But he pointed out that this could obviously not be taken as a measure of the valuation, for the amounts of labor and material involved in the $3,000,000 piece of work might be greater than that in the $10,000,000 piece. His point was that the $3,000,000 and the $7,000,000 items are altogether different and cannot be added. If an effort is made to translate the present and pre-war values of the dollar to equivalent basis, then one is back practically to the problem of determining reproduction costs.

On the matter of depreciation charge, Mr. Emery stated that there has been a tendency in late years to assume that this was for the purpose of wiping out investment. He stated that this was entirely at variance with recent opinion of the United States Supreme Court. If a piece of property wears out the company is entitled to get that back in terms of present-day value. He acknowledged that there were serious accounting difficulties in this.

On motion, the convention adopted the report of the valuation committee.

W. R. Maltbie presented the report of the committee on special taxes by making a very able review of it. The report follows in abstract:

Special Taxes

In view of the fact that so many burdens carried by public utilities, and particularly by the electric railways, have been disguised under other names, it is necessary for any intelligent discussion of the subject that we have a definition of "tax." For the purposes of the present report we are regarding as a tax any charge imposed or service exacted which operates to the benefit of the community as a whole or to any part thereof, excepting such charges or services as react to the benefit of the users of the street railways in the ratio of their respective use.

With this definition of taxation in mind the committee prepared a questionnaire, and forwarded it to all of the member companies with the hope of determining definitely the full variety of tax burdens, and to some extent the total tax burden, carried by the industry. Replies were received from 113 companies and the following tabulation made.

Excess Profits Taxes—Excess profits taxes are, of course, no longer imposed, but the fact that in a number of cases the excess profits taxes imposed for the year 1917 and subsequent years have not yet been adjusted, and the further fact that the government still has a considerable period of time within which to review the returns for the later years of the operation of the excess profits tax law, fully justify, your committee believes, a discussion of the question at this time.

The street railway industry passed, in many if not most of our larger cities, through a period of consolidation. At that period security issues were not under the control of public service commissions, and accounting standards for the industry had not yet been unified and were to some extent undeveloped.

The minor companies owned in many cases valuable intangible rights and these, together with the anticipated increased revenue resulting from the economy and efficiency of consolidated operation, were capitalized by the promoters of the consolidation, in accordance with the then current business practice.

But an internal revenue department field agent, examining in 1920 or 1922 an income tax return for the year 1917, 1918, or 1919, can find nothing in his rules and instructions to cover such a situation and therefore is apt to slash millions of dollars out of the invested capital claimed by the company, change its surplus into a deficit, and finally present it with a bill for taxes on excess income.

Some of the cases have been adjusted and the companies relieved by the presentation of evidence establishing the value of intangibles and thus restoring to invested capital all or a part of the amount wiped out by the field agents of the internal revenue department. In other cases the companies have decreased or set aside the levy for excess profits tax by showing that they were entitled to increase for the years in question the modest provisions made for depreciation, although the result (since under commission regulation comparatively few companies carry any appreciable surplus over from year to year) must necessarily be to seriously reduce the surplus or even to create, at least for income tax purposes, a deficit.

It has been suggested by some of the companies that it might be possible to handle this situation on the basis set down by Sec. 210 of the act of Oct. 3, 1917, whereby the deduction to be made can be determined by a comparison with standard concerns in the same line of business. Some work was done by our predecessor committee with the idea of assisting in such a movement, but the difficulty of finding representative companies whose returns had been already examined and pronounced satisfactory by the government, coupled with the difficulty of applying such a standard on account of the unstandardized character of operating conditions, led the committee to abandon this mode

SUMMARY OF TAXES PAID BY 104 ELECTRIC RAILWAYS

DIRECT TAXES		
Federal corporate stock tax (seventy-five companies reported)		$274,820
Federal income tax and state income tax:		
Federal income tax (sixty-seven companies)	$3,486,016	
State income tax (eighteen companies)	596,631	
Federal and state income tax (one company)	6,648	
Total (seventy-three companies reported)		4,089,295
Real and personal property taxes:		
Real property tax (sixty-five companies)	$2,734,928	
Personal property tax (thirty companies)	3,720,443	
Real and personal property taxes (thirty-three companies)	5,669,446	
Total (ninety-nine companies reported)		12,124,817
Franchise tax (fifty-one companies)		1,822,434
Real and personal property and franchise taxes (three companies)		330,752
Gross receipts tax (fifty-one companies)	$3,101,276	
Franchise tax and gross receipts (three companies)	87,318	
Total (fifty-four companies reported)		3,188,594
Net receipts tax (two companies)		1,796,568
Licenses:		
Car licenses (twenty-six companies)	$431,032	
Pole licenses (nine companies)	3,365	
Wire licenses (two companies)	2,260	
Track licenses (seven companies)	7,213	
Car and pole licenses (one company)	717	
Car, pole and wire licenses (two companies)	11,143	
Pole and wire licenses (one company)	1,033	
Car advertising licenses (one company)	125	
Total (thirty-five companies reported)		456,888
Miscellaneous taxes (forty-six companies)		826,128
Total direct taxes		$24,910,296

IMPOSTS		
Paving construction and paving repair and maintenance:		
Paving construction (sixty companies)	$2,372,143	
Paving repair and maintenance (sixty-four companies)	2,466,045	
Paving construction and paving repair and maintenance (three companies)	580,355	
Total (eighty-four companies reported)		$5,418,543
Street cleaning and street sprinkling:		
Street cleaning (ten companies)	$660,944	
Street sprinkling (twenty-three companies)	70,422	
Street cleaning and street sprinkling (two companies)	40,644	
Total (thirty-four companies reported)		772,010
Snow removal (thirty-one companies)		325,870
Bridge construction (ten companies)		262,009
Bridge repair and maintenance (thirty-four companies)		216,692
Traffic policemen (six companies)		115,937
Support of public service commission or other body or officer (twenty-five companies)		172,291
Street lighting (thirteen companies)		47,286
Free transportation of police, firemen, mail carriers and municipal employees:		
Police (seventeen companies)	$523,866	
Firemen (thirteen companies)	242,313	
Police and firemen (thirteen companies)	472,119	
Mail carriers (two companies)	473,306	
Municipal employees (five companies)	62,272	
Total (thirty-one companies reported)		$1,773,876
In addition to the above, forty-seven companies reported that they give free transportation to police, firemen, mail carriers or municipal employees but no record of the amount is available.		
Miscellaneous imposts (six companies)		$289,744
Total imposts		9,394,258
Total taxes		34,304,554
Total operating revenues		358,530,280
Direct taxes as percentage of operating revenue, 6.9 per cent.		
Total taxes as percentage of operating revenue, 9.6 per cent.		

of attack; and, so far as we know, it has not been satisfactorily followed by any company in the industry.

Depreciation

The difficulties which the companies are finding today since the repeal of the excess profits tax, arise chiefly out of a ruling of the department on the question of depreciation.

The government has always been willing in the administration of the income tax to allow as a deduction from income a reasonable sum based upon the estimated life of the unit of property in question. In the case of a corporation the department is disposed to insist that this depreciation cannot be allowed unless it is charged off against capital or set up upon the books as a reserve.

The rulings of the income tax division and the income tax law itself have been changed in this regard a number of times.

The present situation may be summarized as follows:

1. The present law and the act of 1918 make no requirement that the depreciation claimed shall be charged off.

2. The treasury regulations require that all depreciation claimed should be charged off, but that where it has not been charged off the books may be reopened and the proper allowance claimed.

3. Where on account of the payment of dividends in previous years there is no available surplus against which the proper credit to a depreciation reserve can be debited the allowance can still be claimed by writing it off against principal or capital. In such case the ordinary dividends in the years when proper depreciation was not claimed would seem to become a liquidation dividend in whole or in part and therefore under the revised ruling (Regulations 62, 1922 edition, Paragraph 1546) not to be subject to tax in the hands of the stockholders.

4. Banks, as a special class of corporations subject to federal or state control in their accounting, may carry supplemental books of account showing depreciation charged off without entering this charge upon the books required by state and federal authorities.

Conflict Between State and Federal Depreciation Regulation—In this matter of depreciation the electric railway industry, in common with other public utilities, finds itself in a situation somewhat similar to that of the banks. For income tax purposes the federal government allows a certain deduction of depreciation as an operating expense, the particular rates being subject to the approval of the treasury department. These rates are fixed or are supposed to be fixed on a straight line basis adjusted so as to accumulate by the end of the useful life of the various classes of apparatus the total difference between original cost and scrap value. A private corporation consequently, without fear of criticism, public or private, may adjust its rates so as to earn the full amount of this depreciation plus a reasonable return, distribute the reasonable return to its stockholders, and hold the full amount of the depreciation, without payment of any income tax thereon, as a reserve to be invested in expansion of the plant or elsewhere to benefit the stockholders.

The public utility, on the other hand, usually finds its appropriations to a depreciation reserve limited by action of the public service commission under which it operates and further finds its earnings limited to a fair return over and above the commission-fixed allowance for depreciation. If by chance the depreciation allowed by the commission is equal to that allowed by the income tax department of the federal government, the dual control introduces no difficulty, but if, as sometimes happens, the depreciation allowance set up by the commission is less than that allowed by the federal government, the utility must either accept the depreciation allowance as limited by the commission and therefore pay to the federal government an income tax upon earnings which would be tax free with a private corporation, or else make up the difference between the commission depreciation and the income tax department depreciation out of its net earnings applicable to fair return, and in the latter event either decrease the return to its stockholders below the fair return allowed by the commission or else treat a part of this fair return as a liquidating dividend resulting in depletion of capital and impairment of credit. It would seem desirable, therefore, that the industry should attempt to secure a special ruling similar to the bank ruling above noted.

Income Tax Bureau's Attitude

The situation outlined above, common to all public utilities, is further complicated in the case of the electric railways by the attitude of the income tax department toward depreciation of way and structures. If a company has been in existence for a number of years and has a large quantity of diversified trackage, it is probable that the lapse of time has brought about such an equalization of replacement charges that the tracks and right-of-way structures are maintained in status quo by a practically uniform annual expenditure on maintenance and replacements. It is therefore unimportant from the accounting and financial point of view whether (1) a part of this necessary annual sum is appropriated first to a depreciation reserve and then charged out of the depreciation reserve for major replacements, or (2) the entire sum is charged directly to maintenance without the intervention of a depreciation reserve account.

The Interstate Commerce Commission therefore in making up a standard system of accounts for electric railways (which system has been adopted by many if not most of the state commissions) has left it optional with the companies whether they will carry a depreciation reserve for way and structures or will maintain them in full operating efficiency by direct charges to maintenance for such replacements as may be necessary.

In the steam road case arising under the act of 1909 the court ruled that the depreciation of the roadbed and of the structures connected therewith must be treated as a whole. The jury under these instructions found no depreciation, and the decision thus reached by the lower court was upheld by the Court of Appeals. The expense of keeping the road in repair and of making replacements had, of course, been claimed and allowed as maintenance.

Basing its action apparently upon this decision, the income tax department is refusing to allow to electric railways any depreciation on way and structures, thus practically forcing the industry to adopt the second of the alternatives allowed it by the Interstate Commerce Commission.

In all cases where the diversity of the items which enter into the account, the magnitude of the plant, and its age have in combination produced an equalization of renewal charges from year to year this ruling works no hardship, but in all other cases it is apt to result in a distinct financial injury to the utility.

It is the feeling of the committee, therefore, that the association should attempt to secure a revision of the ruling of the income tax division so as to leave to individual electric railway companies the option allowed them by the Interstate Commerce Commission.

State and Local Taxation

Besides federal taxation as discussed above the street railway industry makes contributions to the state, to the county, in the case of interurban or suburban lines, and to the local municipality or other taxing district. The burdens imposed under this head may be divided into three broad classes:

1. The usual tax on real estate and personal property, paid in common with all other citizens of the state, whether individuals or corporations. In this class would also be included state income taxes. This first class represents the same type of burden as that imposed upon general corporations or individuals.

2. Special types of taxes not applied to the general corporation but either to utilities as a class or to the street railway as a special type of utility. In this class may be included taxes upon so-called intangibles, and upon franchises or easements.

3. A long list of special burdens imposed upon the transportation industry and not imposed either upon private citizens, general corporations or other utilities. These special burdens for the most part consist in the requirement that the utility shall render free service either to certain groups of citizens or employees or shall perform individually at its own expense certain pieces of public work. They are taxes in that they are expenditures which would otherwise be paid for out of the public purse and are therefore,

to the extent of their cost, just as distinctly a tax burden as a definite rate imposed upon real estate.

No special consideration need be directed to taxes of the first class.

It is hard to lay down any general theory of taxation based upon equitable considerations which will justify taxes of the second class. There is certainly no basis for imposing upon the public utility a greater tax burden than is borne by the average normal corporation. The second class of taxes, therefore, must be justified, if at all, upon either practical considerations or as a historical survival from times when they had a practical economic basis.

But it should be noted that in cases where some such historical or practical justification may be adduced it is the justification of a gross receipts tax as a substitute for the flat property tax to which an ordinary corporation is subjected, and in no sense a justification of a gross receipts tax super-added to a flat property tax, except possibly in those cases where the gross receipts tax is contractual in its character and partakes of the nature of a payment for the franchise.

The justification of franchise or easement taxes demands also the assumption of conditions which existed at one time in the history of the industry but exist no longer. Given a street railway, for example, which enjoyed a legal monopoly of mass transportation at a fixed rate under which it was able to make large profits upon its invested capital, it was not illogical for the public to reason that these large profits were possible only because of certain exclusive rights in the public street, that these exclusive rights, protected by law, became valuable property which was in itself profit-producing to the owners of the utility, and that therefore it was not inequitable that they should pay a tax thereon.

But, given a complete change of the theory of operation by which the profit-producing character of the exclusive right is destroyed and the profit limited to only a fair return upon the property owned exclusive of the franchise rights, the justification for the franchise tax is destroyed and instead of being a levy upon the stockholders in proportion to the value of property owned by them it becomes merely an indirect burden placed upon the users of the utility for the advantage of the general public.

Burdens Imposed by Public

Taxation of the third class, consisting of various service burdens laid upon the utilities for the benefit of the general public, sub-divides at once into two sub-classes according as the tax in question was or was not justified.

The nature of this classification will be perhaps clearer if we will consider first the distinction between a true operating or construction charge and a public burden. If, for example, it is desired to extend a street railway system over a street already improved with a high-grade, modern pavement, the cost of cutting through this pavement and restoring the street to its original condition is a construction cost properly chargeable against the users of the street car service. Moreover, if from time to time it becomes necessary to open the pavement at certain points, the cost of such opening, together with the cost of restoring the pavement to its original condition, is a true operating charge made solely as an incident of operation and properly chargeable to the users of the utility.

If, however, on the other hand, the street car line precedes the pavement, operating over an ordinary road which the municipality decides to improve with a modern pavement; or if the pavement finally wears out under ordinary traffic conditions and it becomes necessary to repave, such repavement or such new pavement cannot properly be charged as either a construction or an operation expense. If the presence of the track increases the construction or maintenance cost of the pavement, the excess may properly be charged to the railway. If more than this is charged, it becomes merely a burden upon the users of the utility service for the benefit of the general community.

Returning to our two sub-classes of the third type of public burden we would note that the first and most important item in the first sub-class, namely, the class of those which were historically justified at the time of their first imposition, is the matter of paving construction and repair. In the horse car days the transportation companies found paving essential and were, in turn, one of the heaviest users or consumers of paving surface. It was therefore, to this extent at least, logical to require the companies to construct and to maintain the paving within the track space.

But even in these early days the other side of the situation seems to have been entirely overlooked. While it was true that the street railway traffic did wear out pavement and should therefore be charged with renewal costs as an operating expense, it is also true that other vehicular traffic, attracted to the rail as an iron tramway, assisted in the wearing out of the railway rail, acted as an interference with railway traffic, and contributed perhaps even more than the railways themselves to the wear of the pavement within the track space. It would seem therefore logical that the street railways should have claimed out of the general tax levy a credit for public service rendered as an offset against the admittedly logical charge for pavement outworn.

Today there is no longer any logical basis for any pavement cost whatever, except that purely incidental to and resulting from the operation of the cars over the tracks. The street car rider is paying a portion of the expense of providing a smooth pathway for the pleasure rider, the commercial truck, and even the jitney competitor.

The second sub-class consists of those public burdens which were never logically justified by any relation to operating cost. There is no logical reason, for instance, why the users of the street car system should pay for the transportation of the public police.

All of the public burdens of this second sub-class originally found their justification, so far as they could be justified, in purely practical considerations. The railways were operating under fixed rates of fare determined by charter or by act of the legislature. They were believed by the public to be extremely profitable businesses, and any additional burdens which could be loaded upon them, either with or without their consent, represented a transfer from the pockets of the stockholders to the public coffers and by so much decreased the general tax rate and the burden upon the general public. In other words, these burdens were a tribute paid by the operators of the transportation system as the price of non-interference by the public with a situation or business which it was believed would, even then, remain profitable.

Regulation Has Changed Situation

With the development of commission regulation, however, the entire situation changed. The business no longer operated upon a fixed charter or legislative rate but under a rate subject to constant modification by a commission operating on the theory of allowing only a fair return on fair value and allowing this fair return in addition to all operating costs, including both direct and indirect taxes.

In consequence of this changed theory of operation there was an immediate transfer of the public burden from the shoulders of the stockholders of the property to the shoulders of the users of the utility service. The more perfect and automatic commission regulation becomes, and the more frequent the rate adjustments, the more complete the transfer of the burden, until today in many states the street railway, instead of being a genuine taxpayer, has become merely an instrument by which a considerable percentage of the burden of public administration and public protection is, under the disguise of a charge for service, collected for the benefit of the people as a whole from the users of utility service, and even from them not in proportion to their need for public administration and public protection but in proportion to their use of the facilities furnished.

The inequity of this condition which, be it noted, does not operate to the injury of the street railway stockholder, has been still further heightened by the development of transportation other than the electric railway.

It is the opinion of your committee, therefore, that all taxation or public burden in addition to the taxes imposed upon other corporations, imposed upon a transportation system under public utility regulation, is inequitable to the users of the service; and that it is also injurious to the street railway system in that it introduces an unnecessary cost into the operation of the road and by so much increases the difficulty of

developing proper public relations. We recommend, therefore, that our member companies give full publicity to the existing situation with regard to public burdens and co-operate with the users of their service in an attempt to have the public burden properly distributed over the general public.

Public utilities as a class should be able to make out a strong case for preferential treatment at the hands of the taxing authorities. Commission regulation sets a maximum rate of return slightly above the legal rate of interest. Practical economic considerations at the present time are holding the net return of many of the street railway companies at an even lower figure. The riding public, therefore, who are the real users of the street car investment, would seem entitled to claim the same low tax rate as, for example, the security holders or the bankers.

On the other hand, public utilities as a class and the street railways in particular play an absolutely essential part in the development of community wealth. They would seem, therefore, entitled to claim as favorable treatment as a manufacturer or merchant, particularly in view of the fact that the merchant or manufacturer, taxed upon his invested capital and turning over his invested capital from three to five times per year, is compelled to increase his sales price by only one-fifth to one-third of the tax percentage, while the utility, requiring by the nature of its business from three to five years to make a single turnover of its invested capital, must increase its sales price to its ultimate consumer by from three to five times the tax percentage.

Sooner or later the public itself will object to public utility taxation in excess of that imposed upon other corporations of no greater importance to community growth. If public utility regulation by commissions becomes thoroughly effective; if the owners of the property represented by the stock and bondholders, are limited to a fair return as compensation for the accumulated wealth devoted to the public service; and if the tax imposed has no effect whatever upon reducing or increasing the income which these owners receive; the next step in logical development is for the users of the service to refuse to bear an excess share of the public burden because the nature of their business or their habits of life compel them to make use of the utility.

There is another reason for the discussion of this problem, apart from the interests of the street car companies and the interests of its patrons. One of the most serious problems of the day is that of municipal, state, and federal extravagance. The check upon public extravagance is to be found only in a demand on the part of the public for economy, and one of the first and most important steps in the development of this public demand is the elimination of indirect taxation. The tabulation shown in this report indicates that approximately 10 per cent of the gross receipts of the street car companies of the United States is devoted to some form of public burden. The average fare at the present time is 6.92 cents or, in other words, an average of nearly two-thirds of a cent out of every street car fare collected in the United States is an indirect tax upon the street car users for the benefit of the general public.

The average workman riding to and from his work three hundred days in the year pays in this one item an indirect tax of approximately $4. If this indirect tax and other numerous indirect taxes which he pays could be bundled together with the relatively small direct tax which he is called upon to meet, labeled, and known to him as a tax, we would find a pressure for public economy making itself evident at the polls in unmistakable fashion.

While no such radical action on public utility taxation is to be immediately anticipated, your committee is convinced that the present nation-wide study of the whole tax problem must lead to important changes, and that our member companies should adopt a uniform attitude and aid in the early development and adoption of an equitable and intelligent scheme of public utility taxation.

The report was signed by Edwin Gruhl, A. G. Neal, A. M. Robertson, H. B. Sawyer, Paul Shoup, and W. H. Maltbie, chairman.

President Emmons gave credit to Mr. Maltbie for having secured the return of several hundred thousand dollars paid in taxes by the Baltimore company, and stated that railway companies in trouble should know that there is a way to get relief.

F. W. Doolittle presented a very able paper on "Essential Operating Costs." This appears elsewhere in this issue.

Mr. Dalrymple Gives Talk

James Dalrymple, manager Glasgow Corporation Tramways, who attended the convention all the week, gave a brief talk before the American Association Wednesday morning. He was reminded, he said, that when he first visited the United States some twenty years ago, he was looked upon with suspicion because of the municipal operation of the Glasgow Tramways. He added that the question of municipalization was then very much to the front in this country.

It is now thirty years since Glasgow began the operation of its railways. The occasion for that was the expiration of the company's franchise. The city tried over a long period of time, he said, to come to some reasonable arrangement with the company, but the company then operating was so short-sighted and so arrogant that the citizens finally gave up hope of reaching any reasonable settlement and had to take the property over and operate it. If the street railway in Glasgow had been operated then as the railways of this country are now being operated, he said, he doubted if it would have been taken over by the city, at least at that time.

The operation in Glasgow was successful almost from the start, and it was this that gave great impetus to the spread of municipal ownership in Great Britain, where about 100 railways are now municipally operated.

Mr. Dalrymple said that municipally operated companies there had had their ups and downs and had had to fight for their existence. He said that we are discussing the same subjects here as they are in Glasgow, both as to revenue and operating expenses. The railways there had to increase their fares in practically every instance. The statutes formerly limited most of the railways to a 2-cent a mile maximum rate. Many of them which were operating for less money have had to raise to the maximum and many others which were operating at the maximum had to go as much as 100 per cent over the 2-cent rate. Very few fares have been reduced. There has been a large increase in the cost of wages and materials. Materials are two to three times above the pre-war cost there, and wages are about 100 per cent higher.

Mr. Dalrymple commented that since he was here last, ten years ago, he has noted a remarkable improvement in all of the companies visited on his present trip. He said that the railways were in very much better condition than ten years ago. He observed that the railways here are considering their obligations to the citizens in the United States more than ever before.

As to the principle of municipal ownership, he said that they had a feeling in Great Britain that if the citizens of a city say they want to run the street railways themselves, they ought to be allowed to do so. If any city decides that this is the right principle to follow, then it must pay to the company, of course, full value for what is taken over.

Charles E. Elmquist, formerly chairman of the Federal Electric Railways Commission, presented a paper in which he reviewed some aspects of the commission's work in the light of the experience of the last four years and made some suggestions for the benefit of the railway industry. Mr. Elmquist's paper appears elsewhere in this issue. His paper was prefaced by some most interesting discussion of the political situation in Minnesota, as a result of which he left his audience with the feeling that in spite of recent elections, the integrity of the people of Minnesota is not in danger and that conditions there are fundamentally sound.

A Commissioner's Forum

Following the address by Mr. Elmquist, the convention had the pleasure of listening to addresses by five public utility commissioners: Dwight N. Lewis, member Iowa Board of Railroad Commissioners and president of the National Association of Railway and Utilities Commissioners; Henry C. Attwill, chairman Massachusetts Department of Public Utilities; Charles C. Marshall, member the Public Utilities Commission of

Ohio; Lewis E. Gettle, chairman Wisconsin Railroad Commission, and William Milnes Maloy, chairman Public Service Commission of Maryland. These men discussed both the specific situations in regulation in their several states as well as general regulation problems. Abstracts of their remarks are presented in a symposium elsewhere in this issue.

Thursday's Sessions, A.E.R.A.

THE final session of the American Association was called to order by President Emmons on Thursday morning. C. L. Henry, Indianapolis, presented a proposed revision to the constitution and by-laws, providing as follows:

Proposed Addition to Article VI (d) to follow at the close of this Article.

If a meeting is held without a quorum present, the action taken at such meeting will be deemed legal and binding, the same as if a quorum were present, if the minutes of such a meeting are approved at the next subsequent meeting at which a quorum is present.

On motion the meeting adopted the amendment.

F. R. Coates presented the report of the committee on publicity, an abstract of which follows.

Committee on Publicity

A report of your committee on publicity of necessity must overlap somewhat on the work of the special manufacturers' committee on co-operation, the committee of one hundred and the accident prevention committee. This is because the work of all of these committees and that of the advertising section, through which all our publicity and advertising work clears, are very closely co-ordinated.

Epitomized, the work of the advertising section touches the advertising and publicity fields of electric railway and manufacturer companies, all daily and weekly newspapers in the United States, and the state committees on public utility information. All told, the section is co-operating with about 1,000 publicity and advertising men throughout the country who aid in the gathering and dissemination of good-will material.

One of the most important functions of the advertising section is to make available to newspapers, magazines and other publications facts about the electric railway industry. The committee's efforts have been to render a genuine news service to the newspapers and magazines, and proof that it has accomplished this endeavor is found in the fact that all statements and stories that it has released have been used generously by the large press associations serving the daily newspapers, the weekly newspapers and magazines. It never has offered for release a single statement which has been refused publication on the ground that it was colored or biased, or rejected on the charge that it was for propaganda.

News material has been released very largely during the last year through two main channels, the national press associations for the daily newspapers, and the state committees on public utility information for the weekly newspapers. Direct mailing to newspapers, except when news material of only local significance has been offered, is not followed for the dual reason that if a statement has news merit, it will be handed to the larger papers by the national press associations, and the state committees will take care of the smaller papers. Editors are overburdened with news releases and the committee seeks to aid them by avoiding direct mailing.

Special emphasis is laid by the committee on the fact that electric railways have two things of interest to newspapers—news material which has facts of general interest to the public, and advertising material, which may have news interest, but primarily belongs in the paid space sections of the papers. There is no reason in your committee's opinion why any newspaper should publish material belonging in paid space in its news columns, and the committee not only exercises great care to keep such material out of its news releases, but also urges individual companies to follow the same course.

At different times during the year larger newspapers of the country have carried news releases supplied by your committee dealing with: Growth of the electric railway industry in the last thirty years. Financial problems of electric railways. Public relations. Reviews of all major phases of the 1922 electric railway situation by the president of the association. The industry's need for more men. Electric railway financing. Trackless transportation. Need for uniform motor vehicle laws. Maintenance and construction of highways. Interest of the car rider in electric railways. Failure of the 5-cent fare in Seattle and of buses in Saginaw, the weaknesses of municipal operation and various other news stories. Your committee believes that all of the news statements previously mentioned were of a constructive character, calculated to aid in maintaining good local transportation for the benefit of the public generally.

The committee wishes to say that one of the first things that every state committee should do—and most of them do—is to urge paid advertising upon utility managements. Advertising does pay, and utilities should pay for everything that is properly classed as advertising. If you think you can go into a state committee and get free advertising into the newspapers which should go in as display, you had better stay out. It can't be done, and no fair-minded utility man should ask it—unless, of course, he is willing to give free street car service, electric lights, heat, water and telephone to papers just as he asks them to give away their space for something which is not news.

The advertising section has co-operated with the special committee on manufacturers' co-operation to a greater extent during the last year than ever before. Under the general direction of Chairman Wickwire the section has not only supplied material to the manufacturers for use in their good-will work, but also has helped conduct an intensive organization campaign for them. At the beginning of the present fiscal year only a few manufacturers were doing any good-will work for electric railways or had gone on record as being willing to do it but now approximately one hundred companies are enlisted in the cause.

Under a special working agreement between the Association and the committee of one hundred, part of the time of Fred C. J. Dell, director of exhibits, is allotted to this work.

The committee on publicity can think of no effort that would be more helpful to its endeavors as a continuation of the work of the manufacturers' committee as it has been carried on during the past year.

Bulletins and Posters

Once a month the advertising section, under the direction of your committee, issues a bulletin called *Truth*, which contains current information regarding movements in the electric railway field, consisting of brief news stories, editorial comments, etc.

This bulletin, which is prepared by the director, in a non-technical style, is particularly valuable to state committees on public utility information and electric railway companies and manufacturer companies having house organs.

In fact, much of the electric railway material, not of a strictly local character, which is found in clip sheets of the state committees on public utility information and the forty or more electric railway company publications which are printed in the United States is taken from *Truth*.

Truth not only circulates among these committees and companies, but also is sent to various organizations which use it as a reference or place it on their bulletin boards to be read by employees and others. The total monthly circulation of this bulletin is about 3,000.

At the suggestion of the committee on publicity, the director of the advertising section has been co-operating with the accident prevention committee in the preparation of poster and advertising material designed to decrease accidents.

The services of the advertising section to electric railway companies fall into two general divisions. The first

is rendering a regular bulletin poster and suggested advertising material service to companies as a part of the routine and the other is to render special advisory service in local situations.

The committee has been pleased to note during the last year a growing tendency on the part of companies to avail themselves of this special advisory service. Scores of special requests have been made to the director of the advertising section for his advice and suggestion, and many companies, particularly, the holding companies, have sent their publicity men to New York to confer with the director on special problems, such as motor competition, paving taxes and merchandising transportation. Various companies, contemplating the organization of publicity departments, also have conferred with the director for the purpose of ascertaining the requirements of such a department in the way of personnel, finances, and so forth.

By virtue of being in close contact with all the publicity departments of the electric railways of the country, the director is in a position to give suggestions on almost any phase of a publicity or advertising problem. He can and will quickly give information as to what are the best methods of organization and of conducting a public relations department.

The services of the director also are available for companies having big problems of sufficient importance to warrant the director making a trip to the property. Whenever possible his personal services on the ground will be made available for limited periods.

The report includes a list of companies which are using company publications in their publicity work.

Recommendations

The committee believes that its activities should be continued along the general lines heretofore followed and every executive in the industry should lend his hearty support to the section's work, not only by having his advertising men co-operate with the section, but by following its work himself and offering suggestions and advice. The committee believes that the greatest weakness in the public relations machinery of the electric railway industry today is the failure of executives to present their stories personally to the public. There should be more speaking done at state and national gatherings by men who are familiar with electric railway problems. The committee strongly urges that particular attention be paid to developing this feature of its work during the coming year.

The committee has under way the development of increased service, in the way of posters, suggested newspaper ads and articles for interurban roads, and it strongly urges that this work take precedence over everything else at the beginning of the new year. The committee believes that the taxation problem particularly on city lines is one of the biggest before electric railways, and it suggests that the efforts of the advertising section early in the year be directed toward the preparation of posters and other material designed to place the outstanding tax burden facts before the public. The industry is suffering greatly from pleasure cars giving lifts to prospective customers of electric lines and some advertising material dealing with this situation might well be prepared.

The committee strongly recommends closer co-ordination between the members of the manufacturers' committee and the committee on publicity of the association. If they will strike at the same phases of our problems simultaneously, much lost motion will be done away with and better results obtained.

The report was signed by P. S. Arkwright, J. F. Collins, P. H. Gadsden, L. E. Gould, F. T. Griffith, A. A. Hale, G. A. Richardson, L. S. Storrs, Elton S. Wilde, F. R. Coates, chairman, and Barron Collier, vice-chairman.

John T. Staub, Baltimore, presented the report of the committee on insurance, which follows in abstract.

Insurance

This committee has had several meetings during the course of the year and is compiling data from a questionnaire sent out on the subject of fire insurance. At this writing the data are not available for this report. The committee therefor has deferred any recommendations on this subject until it has obtained from member companies a full and complete report on which to base its conclusions. It has thought best, however, to suggest in this report certain recommendations which will ultimately assist in securing both a better rate and greater fire protection, as follows.

Fire Insurance—1. Inspection System—A system of inspection to be established and maintained, covering all locations and property of the company. This system of inspection to include the following:

(a) Regular monthly reports from the chief employee at each location.

(b) Inspections by a competent man from the head office to check the reports of local chief employees, report any additional information of value in fire prevention or rate reduction and review the fire-fighting organizations.

(c) Inspections and reports by insurance inspectors furnished by the insurance brokers or by insurance bureaus with the object of checking the work under (a) and (b), keeping standards up to the times and giving the insured the benefit of advice as to the latest practices.

2. Fire-Fighting Equipment — With any needful advice from insurance experts each location to be provided with the proper fire-fighting equipment.

3. Fire-Fighting Organization — At each location where practicable, fire-fighting brigade to be formed, instructed and drilled under competent advice.

4. Signaling System — Also, under competent advice, suitable local or central station signaling system, or both, to be installed at proper locations.

5. Analysis of Insurance Cost — For each location, that is, for each risk having its separate insurance rate make-up, a sheet to be made up showing make-up of insurance rate, annual insurance cost and estimated cost of elementary certain charges, and a book of such sheets, covering all the locations of the insured, to be submitted to the management of the determination of the practicability of removing or reducing the various hazards and charges.

6. Adoption and Enforcement of Rule as to Building Changes and Construction—The rule to be adopted and enforced that any plans for changes in buildings or for new building construction are to be submitted to proper experts on rates and risks.

7. Blanket Insurance—As a general rule blanket insurance to be obtained where available.

8. Valuations — That complete detailed valuations be made of property at each location, based upon carefully determined unit values, and upon carefully determined depreciation rates for the various items of property.

The following recommendations have also been made:

If pits are not standard, particular stress should be made on keeping them clean.

If stairs are incombustible, they should be properly cut off.

Tracks should run clear from building without break or transfer table, and should have bumpers so that there would be a clear space of not less than three feet between bumpers and wall of building, and not less than five feet between tracks and side walls.

All rails should be bonded.

Cut-off and trolley switches should be installed covering each section with a circuit breaker.

Proper attention should be given as to leaving trolleys in contact when cars are not in service, while stored in barn.

Metal lockers should be installed.

Hose should always be attached to standpipes and be tested out every thirty days.

The committee believes that the property adopting the recommendations and fully complying with them will secure greater protection and ultimately obtain a better rate.

Fidelity Insurance—Replies have been received from nineteen member companies to a communication sent to a selected list, requesting information over a period of ten years relative to the amount of such insurance carried, premiums paid, losses and number of employees. From a compilation of the information contained it will be noted that over the ten-year period the average ratio of losses to premium is only 18.1 per cent. It will also be noted that of the nineteen companies reporting only seven of them bond platform men. The lowest rate obtained for fidelity insur-

ance by the companies reporting is 15 cents per $100 obtained by the Springfield Street Railway, Massachusetts. All the other companies are paying a rate of 20 cents or higher. While these figures would seem to indicate that even a rate of 20 cents is too high for the risk involved, the costs of carrying the insurance are also exceedingly high. It is felt, however, that the committee should point out that the rate of 20 cents per $100 is standard for this class of insurance and that they should be able to obtain such rate.

The following is a summary of information compiled from answers:

Number of companies replying..	19
Period	1913-1922
Aggregate platform men	$18,958,400
Aggregate other employees	$36,396,890
Total	$55,355,290
Total premium	$140,119.65
Total losses	$25,391.69
Average cost per $100	$0.253
Ratio losses to premium, per cent	18.1

The sub-committee is inclined to recommend that the practice of bonding platform men be discontinued owing to the difficulty in proving claims, and for the further reason that the experience of the companies seems to be that it would pay them to be self-insurers.

Standardization of Insurance Forms—The attention of the insurance committee has been directed to the liability on the part of a traction line receiving merchandise to be forwarded, which merchandise before it reaches its destination passes over the tracks of other companies; also liability in the case of shipments of merchandise that may be interstate. As the matter stands at present many interurban companies might suffer a severe loss, believing that they are fully protected.

The insurance committee has, therefore, thought it advisable to suggest that the member companies doing business in the Middle West states, as well as those engaged in interstate business, examine their policies and if there is any uncertainty as to the liability thereunder, they amend their forms by adding to the rolling stock item the following words:

". . . all while in the barns or yards or on the tracks of the assured or of others, wherever they may be in the United States and/or Canada."

Should the traction company be carrying common carrier liability insurance, the wording on its form should be made to read as follows:

"$..... on contents of cars for which the assured have assumed liability under bills of lading or shipping receipts or other agreements wherever the car or cars may be in the United States and/or Canada."

The report was signed by Williston Fish, H. A. Nicholl, Edward M. Wilson, Granville H. Bourne, N. H. Daniels, John H. Moran, Paul E. Wilson, Charles B. Scott, C. E. Morgan and John T. Staub, chairman.

C. E. Morgan, Brooklyn, presented the report of the committee on organization of community sections. This follows in abstract.

Organization of Community Sections

The general plan suggested to the committee was to the effect that a community section would consist of individual members of the association living in the same community or within a certain radius, who would affiliate for a mutual study of their local problems and would hold periodic and frequent meetings for this purpose. Special attention to be given to avoid any possible conflict with existing company section membership or other state associations.

The proposed membership would be much broader than any existing company section of the A. E. R. A., providing for not only electric railway employees but also for others interested in the industry, such as engineers connected with commissions, manufacturers supply dealers, students, college professors, consulting engineers, etc.

The committee feels that much good can be accomplished by the formation of such community sections, furnishing, as it does, an opportunity for those interested in the industry to get together at frequent intervals to discuss their common problems. It would give an excellent opportunity to bring together engineers and operating officials as well as the members of regulatory bodies, manufacturers, supply dealers, and in fact all those interested, from whatever angle, in the electric railway transportation field.

After careful study the committee is of the unanimous opinion that such community sections would be extremely beneficial in many ways to the industry and that the association would materially profit by the added membership.

The committee reported its findings with recommendations to the executive committee of the A. E. R. A., along with the proposed changes in the constitution and by-laws. The general plan of establishing such community sections was approved.

The necessary changes to the constitution and by-laws of the American Electric Railway Association are appended to the report.

The report was signed by James P. Barnes, F. R. Coates, C. R. Ellicott, W. H. Sawyer, Martin Schreiber and C. E. Morgan, chairman.

Company Section and Individual Membership

Martin Schreiber, Camden, N. J., reported for the committee on company section and individual members which appears below in abstract. Mr. Schreiber expressed his indorsement of the idea of having community sections and stated that it opened an opportunity to increase the individual membership to 25,000 or more, which was the goal originally in mind when individual memberships were first established.

During the year one large company section has been added to the list of company sections, and none has dropped out.

The new section, No. 14, was organized by employees of the Chicago, North Shore & Milwaukee Railroad. At the time this report was written, the membership was 173.

The company section group comprises the largest group of members in the American Electric Railway Association. As this report is written, the membership of the combined company sections is approximately 1,800. They comprise the cream of the operating forces of the member companies that have established company sections. From these men the companies draw their future supervisory employees. In the opinion of the committee, all companies should assist in the organization of company sections, not only for the good of the men, but also for the good of the company.

The company section meetings afford an opportunity for the exchange of ideas, the development of social contact that makes for good feeling and greater efficiency and provide the men with information about their company that always is immensely valuable when the men are called on to meet criticism or complaints about service.

Year after year the committee on company sections has urged members of this association to organize sections, and believes that executives should take this advice to heart.

Reports from several of the sections, showing the scope of their activities, were appended. Work of two of the sections has been disrupted of late, so reports were not received from them.

The report was signed by C. P. Billings, F. G. Buffe, F. R. Coates, W. J. Flickinger, J. H. Mallon, W. G. Murrin, A. T. Perkins, Harry Reid and Martin Schreiber, chairman.

L. H. Palmer, Baltimore, presented the report of the committee on mail pay, which follows in abstract.

Mail Pay

The committee has carried on the work of preparing the presentation of the case for increased mail revenue before the Interstate Commerce Commission, and the hearing is set for Oct. 15. The reports that were requested of member companies in April, 1922, have been received in part up to August, 1923. On account of this long time the Post Office Department has requested a short delay in order to include these with the tabulation to be referred to before the commission.

The Post Office Department has cooperated in working out the details, and a large portion of the data will be in the form of an agreed joint exhibit, the facts of which are accepted by both sides. This co-operation of the Post Office Department has much simplified the case, and the committee can see no reason why an opinion should not be handed down by the commission at a relatively early date.

The committee regrets the delay in bringing this case to a hearing before

the Interstate Commerce Commission. It is due almost entirely to the failure of member companies to furnish promptly the information called for. A number of companies, including several which had authorized the committee to represent them, failed to furnish any information whatever, and after waiting for a long time the Post Office Department finally consented to a hearing with the partial information that was on hand.

The committee states in conclusion that the calculations to date indicate that it can prove that the industry is entitled to a substantial increase in mail pay rates.

The committee report was signed by C. L. S. Tingley, G. K. Jeffries, Samuel Riddle, W. S. Rodger, R. A. Leussler, Gordon Campbell, H. B. Weatherwax, R. P. Stevens and L. H. Palmer, chairman.

W. H. Sawyer, East St. Louis, presented the report of the committee on memberships, company and associate, which follows in abstract.

Company and Associate Membership

Since Oct. 31, 1922, the following gain in membership of the association has been made.

Company	Oct. 31, 1922	Oct. 8, 1923	Gain
Railways	348	339	9*
Associates	15	18	3
Manufacturers	244	289	45
Total	607	646	39

*Loss.

As the total company membership of the association on Oct. 31, 1922, was 607, we show a gain in new companies of approximately 10 per cent.

During the year certain companies resigned their membership or were dropped from the rolls in accordance with the provisions of the constitution, these numbering altogether forty companies, so there has been a net gain during the year of twenty-one companies.

An appendix attached to the report shows a tabular comparison of the membership this year and last year, also a list of the new company members.

Permanent Campaign

It is the recommendation of the committee that the permanent campaign for new members inaugurated last year be continued in the future, and the committee is convinced that much work lies ahead of the new committee in extending the work. The service of the association has become a real necessity to the industry, is essential to its welfare and progress as well as to that of every electric railway company in the country, all of which should be members and support the organization which is the national representative of industry. It is believed that if these facts can be brought home in a definite way to non-member companies they will readily affiliate with the association.

The report was signed by H. H. Adams, W. R. Alberger, A. C. Blinn, Luke C. Bradley, F. D. Burpee, T. C. Cherry, Jilson J. Coleman, L. E. Gould, Edward M. Graham, A. L. Kempster, George R. Lyman, W. J. Lynch, J. C. McQuiston, H. H. Norris, R. T. Sullivan, E. M. Walker, E. P. Walker, E. A. West, E. F. Wickwire, J. H. Wilson and W. H. Sawyer, chairman.

After briefly reviewing this report, Mr. Sawyer addressed the meeting as follows:

Revisions of the printed report to bring it up to date show that we now have 339 railway member companies, eighteen associate companies and 289 manufacturing companies, or a total of 646 companies, which is thirty-nine companies more than we had a year ago.

In this campaign I have personally written practically every non-member railway company in the United States, and my own conclusion from the replies received is that a great number of the non-member companies are simply plain slackers, and if you don't like the word "slackers" I might compromise and call them "spongers." They know that the American Electric Railway Association saved this industry and is making this industry better and bigger every day and that their company is profiting thereby. They know that the American Electric Railway Association spends time and money collecting data which are of vital interest to every electric railway in the country—that is, most of them do, for out of all the replies received there were only two companies which even by inference implied that the association was not doing good, efficient, constructive work.

Some of the companies are small companies who feel that they cannot afford even $50 dues per year. Some of the companies are in receivers' hands, and feel that they must husband all their resources. Some of the companies are affiliated with other companies in such a way that all data and many other benefits of the association are accessible to them. Some companies do not even have a plausible excuse for being non-members.

There are, of course, non-member companies which we all agree have good reasons for not joining at the present time, but far too many of them put up a straw man excuse when the real reason is that they think they are saving money by not joining, and figure that although a national association is necessary and our association is doing good work, we will continue to do what should be done nationally and that they locally can wiggle along some way and pull through without the data, assistance and inspiration which come from efficient systematic co-operation. I have a feeling both of shame and of sorrow that there are still executives in the electric railway industry who do not realize that every one of us needs all the help and inspiration we can get—and there is no better, no more economical or efficient way to receive that needed help and inspiration than to join the American Electric Railway Association.

There is no possible question in my mind but that the individual companies of this association receive direct and measurable benefits worth far more than their dues. My hope is that the committee this year has stirred up this situation enough, so that next year's committee may be able to benefit by the work which has been done this year, and which, I am frank to say, is not reflected in an increase of only thirty-nine members.

So far as the railway members are concerned, I have in my letters said little about their duty to the industry, but have dwelt upon the fact that sticks out to me so pertinently, that no railway company can in the final analysis really afford not to receive the benefits of this Association.

Attitude of the Manufacturers

Now, as to the manufacturing companies, my feeling is just this—we need their support and they need us. You can call it by any name you wish, but so far as I am concerned—and I am speaking only for myself and not the committee—a manufacturer has no right to expect to make money by selling his product to electric railway companies unless he as a manufacturer will do his fair share toward supporting the industry and this association which makes possible his sales to electric railway companies and makes possible his profits. Other things being equal, I have no desire to see business over which I have control go to a manufacturing company which is not doing its share to support our industry. So far as I am concerned, it is poor business for us to give business, other things being equal, to non-member manufacturing companies. From my standpoint, it is not fair or just when a member company pays dues to our association, comes here with its exhibits, shows and explain to us what the situation is in regard to its product, for us then to go back home and buy from a competitor who cares not for anything except the profit he may receive from the order—from a competitor who does not desire to co-operate or assist or help, but simply wants to take, and take all without giving.

We here believe in the American Electric Railway Association, and further I believe it is the duty of practically every railway company, and every manufacturing company which profits from the electric railway industry, to join the association, a duty not alone to the industry but a duty to itself.

Next year's membership committee will work hard; it will not be derelict—such committees have not been and will not be derelict—but the new members that are added to this association must come from the inspiration given by the present member companies to those now outside of the fold. Each and every member of this association should, out of a desire to help himself and to help his fellow man, consider himself as a committee of one to see that all the interests of the American electric railway industry co-operate and achieve success together.

W. H. Sawyer was again called to the platform, this time to give the report of the committee on co-operation with state and sectional associations. An abstract of Mr. Sawyer's remarks follows:

State and Sectional Associations

The first state committee on public utility information was organized in Illinois about five years ago, and it is due to the wonderful success achieved by this Illinois committee and the co-operation to others given by this committee that there are today more than a score of different committees operating in thirty-seven different states.

Primarily, the purpose of the committee is to give the facts about public utilities to the public through every available legitimate source. They disseminate information through newspapers, state public utility commissions, banking houses, public schools, and colleges, chambers of commerce, boards of trade, Kiwanis and Rotary Clubs, and similar organizations; all of them render on request special information service to individuals or societies.

Some of the committees have speakers' bureaus, and supply speakers for meetings, and all of the directors of committees maintain close personal relations with the leading editors of their respective territory. The contact between these committees and the advertising section of our own association is very close, and is within reason properly co-ordinated so that there is little or no overlapping in the efforts of the two organizations.

Practically every state committee on public utility information is healthy, functioning within reason properly, and without question doing a world of good. There are only some few of these committees which are not fully taking advantage of their opportunity, and are therefore not accomplishing the good which it would be so easy for them to do if they were given proper support by the public utility executives of their state.

My own personal experience has been that for every minute I have given to the Illinois committee on Public Utility Information, for every dollar which our company has contributed, I personally have been repaid many fold by the inspiration given me.

These committees have accomplished wonderful results, but it is not so wonderful after all when we stop and appreciate what a virgin field they had to operate in. We public utility men have been going along for a generation or so efficiently conducting our business but not taking the public into our confidence—not telling them what we had done, what we were doing, or what we were trying to do, and these committees started out to do just what some one should have been doing all the time. Better public relations is the most important question with which the public utility executive of today has to deal—the most important, barring none, for better public relations are necessary to any satisfactory solution of our problems.

Some of you have not been doing your full duty to yourself, to your company or to your industry, but in spite of that these committees have done most excellent work. The results are outstanding; we need no statistics to prove conclusively that these committees on public utility information are doing wonderful work; but they have yet an enormous task before them. We have only scratched the virgin soil and are in a position where we cannot now for one moment afford to lessen our efforts.

These committees have set a precedent and it is going to require greater effort to live up to the precedent already set and to continue the march of progress. To falter now would be disastrous, far better to have never started. Therefore, I beg of you, do not get the idea that just because these committees have done such good and wonderful work that any of us can afford to allow a slackening up. We must all put our shoulders to the wheel and give them more support than we ever gave them.

Edwin C. Faber, in the absence of the chairman, L. S. Storrs, presented the report of the committee on publications, which was most complimentary of the great improvement made in the magazine *Aera* during the past year.

E. F. Wickwire, secretary Ohio Brass Company, Mansfield Ohio, reported in his inimitable and humorous way on the work of the committee on co-operation of manufacturers. This follows in abstract.

Co-operation of Manufacturers

An article in *Aera* for August described the work of the committee up to the middle of July, so it will be necessary only to mention the high points of things done this year and to say a few words about developments since the article referred to has been printed.

We have continued the publication of *Truth*, which contains items about electric railways suitable for posting on bulletin boards, or to be used in house organs and local newspapers. We have issued a little sticker which goes on the letterheads and order blanks used by the purchasing departments of our manufacturing members. It is just an entering wedge, but we are going to evolve further means of enlisting the interest and support of the many concerns who furnish raw materials and supplies to our member companies. The sticker reads:

"You have a dollars and cents interest in the welfare of the electric railways because a large share of the material we buy from you becomes a part of products which are sold to traction companies. Therefore, help them to get fair fares—reasonable regulation—an even chance for success."

It will reach many thousands of companies which have not realized their "dollars and cents" interest in the electric railway industry, and it is bound to create a favorable impression in a field that we have scarcely touched heretofore. This is just another application of the good old motto that "the constant dripping of water wears away the hardest stone."

In August *Aera* an honor roll was printed which carried the names of about seventy manufacturers who were participating in the work. Following an intensive mail canvass of manufacturers, there are now more than a hundred co-operating companies on the roster. The same article outlined an idea for a poster campaign. This campaign has now been launched and shows signs of being the best result getter which this committee has been able to devise.

The opening broadside was fired on Sept. 20, when Poster No. 1 appeared all over the country in street cars, in waiting rooms and on factory bulletin boards. Never has such a response come in for any material which has been offered by the association. The original printing order was increased again and again, and many companies pledged their whole-hearted support. Not a dissenting note in any of them.

This poster was followed Oct. 1 by Poster No. 2, which depicted "600 pounds of conductors," and these men, multiplied several thousand times, threw their weight into the fight for the industry on that date. This poster idea is a practicable and forcible way of reaching the people, although to some it may seem almost too simple. But we must remember that we are trying to appeal to the intelligence of the masses. The good old adage about "aiming high" is all right, but in this case we had better "aim lower" if we want to hit the mark that we're trying for.

The committee feels that the overwhelming response to the poster series is a good indication that the psychology of the plan is sound and that it will go far toward accomplishing our purpose, if it is supported throughout the land—and it's up to every one of us to see that this is done.

This is a method of reasoning with the public, instead of arguing with them. We in the manufacturing business realize that usually if we win an argument with a railway man we lose the order. Let's profit by that little trait of human nature in the matter of our industry's relations with the public and not try to win our case by arguing.

We know that the electric railway has been hampered by adverse public opinion. Many men will actually inconvenience themselves if they think it will injure the electric railway. Some politicians and newspapers have been radical in their attitude toward the electric railway industry, and against everything that the industry has tried to do. Isn't this antagonistic attitude on the part of so many people largely due to a misunderstanding of our industry?

We have evidence which indicates

that the average man carries around a mental picture of Mr. Electric Railway which inspires anything but friendliness. We asked an artist to paint his conception of Mr. Electric Railway. He produced a portrait of a pudgy individual with a fat tummy, a silk hat and dollar signs all over his anatomy. Do you wonder that people are unfriendly if they are carrying around some such mental picture as that of Mr. Electric Railway?

Contrast that conception with the same artist's idea of Mr. Bus Man. This time he sees a friendly, sociable fellow, who may live next door or upstairs or around the block, and a man who has overdue bills and troubles and babies, just like he has himself.

Why doesn't the public recognize that our industry is essentially an industry in overalls? Why don't the people realize that the group of men which receives the largest slice of the money collected by traction companies is made up of the armies of workmen, who build and maintain the track, rolling stock and lines, who make the juice and run the cars—plus the legion of factory employees who make materials for the electric railway industry. Let's get the picture of the friendly man with overalls into the minds of the people and we will find a much different feeling on the streets and at the polls. We believe that it is possible to get that idea across if we combine our efforts in this movement and make them continuous. The public is busy these days and it's hard to make a lasting impression.

It is the nation-wide scope of this campaign that is going to get the results we are after—the adoption of the same tactics that are successfully used to sell tires, chewing gum and cigarettes. Your committee wants to emphasize the idea that the use of these posters must not only be widespread, but it must be sustained.

Favorable statistics will follow favorable public opinion as surely as the tail pursues the dog. The experiences of such cities as Des Moines, Iowa, and Saginaw, Mich., are convincing people that the electric car is an essential form of transportation in a wideawake city and that buses may have their place, but it is not in the place of the trolley car. Improved facilities of the interurbans, particularly in the direction of increased speed, safety and comfort, will not only enable them successfully to compete with the steam roads but gradually to eliminate inferior bus competition. There is more ahead of the electric car today than a safety fender.

Enough progress has been made by the committee to show that the work is valuable and that it warrants a place as a definite part of association activities and a larger organization to carry on the movement. In fact, the surface has scarcely been scratched. Just imagine the results which can be obtained when the full strength of the industry is mobilized and subject to call for instant action. Think of the effect of having the ranks of the railways and the manufacturers organized into a legion which would present a solid front, lined up to fight against unfavorable legislation. The committee hopes to accomplish these things. We have been organized less than two years now, but feel that a real start has been made toward our objective.

The report was signed by R. E. Adreon, George O. A. Barnes, W. D. Blatz, C. R. Ellicott, E. C. Faber, J. C. McQuiston, E. B. Meissner, George R. Rowland, P. L. Thompson, E. P. Waller and E. F. Wickwire, chairman.

Edward Dana, Boston, briefly abstracted the report of the committee on education as follows:

Education

The outstanding feature of the year's work of the committee on education, as covered in its report, was the securing of definite co-operation on the part of a large number of member companies. This took the form of the appointment by seventy-six companies of representatives charged with the responsibility for studying local educational needs, co-operating with the committee on education and putting into operation such plans as prove practical. It was decided early in the year to confine attention to the following five lines of effort: (1) An explanation to executives of member companies of just what the committee aimed to do. (2) An appeal for the appointment of an official or a committee to take up local work earnestly in co-operation with the committee on education. (3) Provision for the delivery of the message of the committee on education to various sections of the association. (4) Getting into direct contact with the educational work being carried on in the industry now. (5) Consideration of the advisability of the association delegating one man to supervise and correlate the educational work of the committee.

For the convenience of member companies, the committee divided the educational problem into the following three component parts: (1) Educating present non-technically trained employees for supervisory positions. (2) Training trade apprentices. (3) Co-operating with technical schools to assure a supply of technically trained recruits.

As to practical things which can be done the following were listed: (a) Participation in co-operative courses with the universities and colleges. (b) Co-operation with high schools and trade schools in either day or night courses. (c) Co-operation between electric railways and large manufacturing industries, including exchange of employees. (d) Conducting classes on the university extension plan. (e) Arranging for periodic staff meetings and series of lectures and instructions on local properties. (f) Providing company section and other educational lectures and discussions on company properties. (g) Provision of shop and departmental apprentice courses. (h) Distribution of company and association literature of an educational nature. (i) Americanization work for the benefit of foreign-born employees. Substantial progress, the committee stated, is being made along these lines in several states.

The committee interested itself in securing the publication of articles relating to employee training and appended a bibliography to its report. Attention was also drawn to a suggested outline of two courses which have been prepared as a result of a conference held at the eighth annual engineering extension convention of the Pennsylvania State College during May, 1923, on the subject of educational courses for public utility employees. In view of the fact that there is an association of the institutions conducting extension courses, it should be possible for such courses as are now being tentatively developed at the Pennsylvania State College to be made available for railway employees in practically any state in the Union. The courses referred to comprise a general one, intended to teach employees the economic conditions under which their companies operate, and a trainmen's course, dealing with shop practice, maintenance, apparatus, testing, supervision, etc.

The committee expressed itself as optimistic over the progress which has been made to date and confident that the importance of educational work has now become appreciated, so that permanent results must come, slowly, to be sure, but in a substantial manner. All member companies, large and small, were urged to appoint representatives to work up educational programs, to analyze last year's report and actively to become associated through the educational committee with the carrying on of this work.

The report was signed by E. J. Blair, Thomas Conway, Jr., C. B. Fairchild, M. B. Lambert, M. McCants, H. H. Norris, A. F. Perkins, F. R. Phillips, T. P. Pulliam, J. V. Sullivan, W. Von Phul, H. E. Weeks, T. S. Wheelwright and Edward Dana, chairman.

Henry C. Spurr, editor *Public Utility Reports*, addressed the association on various aspects of the utility situation. An abstract of his paper appears elsewhere in this issue.

President Emmons, as chairman of the Charles A. Coffin Prize Committee, then read the committee's report announcing the award of the prize. The report, comments of the President and the response of the recipients appears in the front part of this issue.

Relation of Management to Employees

The last feature of the program of the American Association consisted of two addresses on the subject "Relation of Management to Employees." The first of these was by Dr. C. A. Lippincott of the Studebaker Corporation, South Bend, Ind., who has devoted a great deal of attention to employee re-

lations and has shown real accomplishment in that respect with the 200,000 Studebaker employees. An abstract of his address is presented elsewhere in this issue. The second address was by Elisha Lee, vice-president Pennsylvania Railroad System. Mr. Lee gave a pointed discussion on the principles of management-employee relations on the Pennsylvania System and told of the progress there. His address is also presented in abstract elsewhere in this issue.

The committee on resolutions submitted a report expressing the thanks of the association to the public utility commissioners and other speakers, referring particularly to its pleasure "at the cordial support and co-operation expressed in the addresses by the representatives of the automotive interests" and hoping that this "is indicative of even closer relations in the future"; to the convention committees which prepared reports for the convention; to the committees in charge of the convention itself, including the exhibit director; to the exhibitors themselves for their wonderful record-breaking display; to the pier contractors and others in Atlantic City who had been especially helpful, and to the president and other officers of the association for their services during the year to the association "and through it to the entire railway industry." The report was signed by J. G. Barry, H. W. Blake and A. W. Brady, chairman.

A committee consisting of General George H. Harries, chairman; Charles L. Henry and Robert I. Todd then escorted the new president and four vice-presidents to the platform, where they were presented to the association by the retiring president, C. D. Emmons. In accepting the gavel symbolic of his presidency President Budd said he did so with a full sense of the responsibility and at the same time with full hopes of seeing the association and the industry continue in improvement of service and success. With the record of courage and accomplishment, in the face of almost every imaginable difficulty, which the railways showed during the war, with the stable position they have now regained in spite of many handicaps, the industry may be sure, said President Budd, that there can be no future difficulty it will not conquer. The four vice-presidents also made short talks, pledging their best efforts to make the coming administration a success.

The convention then adjourned *sine die*.

Exhibits More Numerous than Ever Before

NOT only in quantity but also in quality the manufacturers' exhibits excelled those of previous years. There were 167 individual exhibits, occupying 75,556 sq.ft. of space on the Pier and 374 sq.ft. outside. An interesting feature was the amount of space occupied by various motor bus manufacturers. A touch of humor was added by the presence of original Toonerville Trolley, used in the making of moving pictures of the well-known cartoons of Fontaine Fox. In that connection it was noticeable that a number of exhibitors, who were prevented by the nature of their products from displaying them on the Pier, used moving pictures to show those interested the working of the apparatus. The manufacturers showed much originality in their displays and arranged the equipment in a very attractive manner. There was also a pleasing harmony in the decorations.

Committee on Welded Rail Joints Meets

THE morning of Wednesday, Oct. 10, was occupied by the committee on welded rail joints with a meeting held on the convention pier at Atlantic City. Fifty or more engineers were in attendance and the meeting was characterized by a spirit of practical earnestness. Dr. G. K. Burgess, director of the United States Bureau of Standards, presided, and W. W. Spraragen, secretary of the committee, assisted him.

After the reading of the minutes of the last meeting, Dr. Burgess called for reports of progress being made in the laboratories where joint tests are already under way. Encouraging reports were made on the tensile, bend, drop and impact tests. A number of joints have already been tested and an exhibit of several broken joints was made during the Atlantic City meeting.

Members of the committee were then called upon to report the results of their analyses of test data for different types of joints and valuable information was given on the following: Carbon arc, electric seam; metallic arc, electric seam; thermit; cast weld; electric bar and electric butt. This work is not far enough along as yet to warrant publication of details.

Dr. Burgess then addressed the meeting on a program of future research work. He showed that great results are expected from the committee's activities, in which the Bureau of Standards is actively co-operating.

A report on the impact testing machine was presented. This machine is now due at the United States Bureau of Standards, where a small building has been erected to accommodate it. Prof. H. L. Whittemore exhibited a proposed design for the foundation of this machine, which was approved. It consists of a massive block of cast iron mounted on coiled steel springs. The joint to be tested will rest on pillow blocks, to which they will be attached by some method not yet determined. The top of the machine is curved to the radius of a car wheel and the machine is designed to duplicate as far as possible the conditions of service. At the same time all uncontrollable variables have been removed.

W. W. Wysor reported on the rotary service testing machine, the design for which is now practically complete. Details of the foundation for this machine were discussed. Estimates have been received of the cost of constructing the machine, and presumably the work will go forward promptly.

The secretary explained to the committee the financial situation, mentioning the expenditures to date and the new appropriations which have been made. He touched upon the work of his office and also some details of the several tests.

Manufacturers Move to Participate in Association's Advertising Campaign

THE manufacturer members of the American Electric Railway Association held a short meeting at 2:30 p.m. on Thursday. There were twenty-four present. E. F. Wickwire explained the ideas behind the movement of the manufacturers to participate in the association's advertising campaign to sell the electric railways to the public, so to speak. He explained that the whole idea was to drive home the thought that the man on the street and the electric railway operator, whether he be the trainman, a man in the shop or an official, were brothers.

In displaying some of the association's posters Mr. Wickwire explained the thought behind them. The campaign was a straight bid for support. There was no propaganda behind it. Mr. Average Man should be educated to a frame of mind where he will be reasonable in his attitude.

The public often had little grievances. These should be offset by popular publicity.

Mr. Wickwire said that so far as the co-operating manufacturers were concerned it did not make any difference to the association who handled the matter, but that it was difficult to separate sales and publicity. In some cases the publicity man was in closer touch with the problem than was the salesman, while in other cases the reverse of this was true.

Mr. Wickwire further said that the new officers of the association would probably arrange to have a program for the manufacturers embodied in next year's meeting. These sessions would be open, with free discussion. The manufacturers have been away from the association idea for a long time now, but Mr. Wickwire did not think that it would be difficult for them to get back quickly to closer association among themselves. In the case of a campaign for publicity such as he had been discussing Mr. Wickwire said it would then be possible for the manufacturers who attend the meeting to carry back the message to their own publicity, advertising or sales forces.

T. & T. Association Proceedings

Traffic Regulation, Merchandising Transportation, One-Man Cars and Bus Operation Are Among the Leading Topics—Accident Prevention Was the Topic of a Joint Session with the Claims Association

THE first session of the Transportation & Traffic Association was opened by the address of the president, Garrett T. Seely.

President Seely's Address

Careful study of what constitute the most pertinent transportation and traffic problems of the industry was given by your executive and subjects committees with the result that the subjects assigned to this year's committees are all of vital importance.

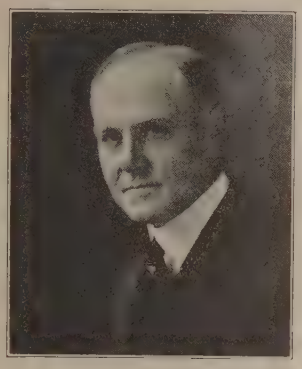
Traffic congestion in the business streets of all cities is becoming increasingly serious each year. The solution of the problem can be worked out only through the co-operation of state and city authorities with civic organizations and transportation agencies. The importance of relief from existing conditions, as well as the prevention of still more serious congestion, made manifest in the committee report that will come before you, warrants more detailed study of remedial measures by a committee in the coming year.

The problem of making the services of the street and interurban railways more attractive to our customers will be presented forcefully in the report of the committee on merchandising transportation. This report will contain much of interest to all of us, the committee developing its study along five main lines of thought.

The use of the weekly pass, or the form of quantity-ride selling, has been extended during the year in an effort by various companies to increase riding through a change from the old stereotyped cash and ticket fare. The importance of the committee's study of this phase of the problem of merchandising is reflected in the fact that where only one company used such a method in 1919, there are in 1923 thirty-five companies which either have it now in effect or have had it in effect.

An especially interesting phase of this same report is the chapter devoted to car design from the standpoint of merchandising transportation. The tendency in the design of cars, as gathered from replies to a questionnaire sent out by the committee, is toward more comfort for passengers, easier entrance and egress, more comfortable seating, better lighting and the like, lower floors with fewer steps, more attractive cars, both as to exteriors and interiors, and the elimination of signs, even sometimes of advertising.

Merchandising by advertising, utilizing employees for selling and other phases of the development of passenger,



Garrett T. Seely
Retiring President

freight and express business are ably considered. The value of the committee studies in the last several years of this phase of the transportation business is apparent, and this subject is one which may well warrant still further attention in the year that lies before us.

The use of the one-man car in city operation has become standardized. Its advantages are thoroughly recognized. There are many suburban and interurban routes as well that are adapted to one-man operation, and the field for this method is extending from year to year. Through scientific car design a type of car is developing which fulfills service requirements, is comfortable and attractive, and, through its light weight, lower platform expense and reduced power and maintenance costs, brings the total costs of furnishing attractive and adequate service down to, or within striking distance of, the irreducible minimum.

The past year has seen sufficient development of the use of buses by electric railway companies as auxiliary

J. K. Punderford
President-Elect

to their car service to yield for the first time for the study of your committee definite facts of costs and operating conditions. The report of this committee will merit your closest attention, developing carefully and concisely as it does the study of the classes of bus service operated, the reasons for the inauguration of the bus service, the type of equipment used, operating and maintenance methods, rates, transfer arrangements and accounting methods, as well as the operating results and the effect of operation on public relations.

This phase of transportation has attracted such wide attention from the public that it is one which must command the careful consideration of every transportation man in the coming year, undoubtedly being a subject that will well repay further earnest study by a committee of this association.

Finally, we have the ever-important subject of accident prevention, which will be presented in a report resulting from a joint study of the causes of accidents by committees of the Claims Association and this association. This study brings consideration of this all-important topic to a still higher plane in the continuation of the excellent committee work of former years.

Every one of these reports should be fully discussed from the floor of this convention. The committee work is the mainspring of association progress. Ours has been a rapidly developing industry and it is chiefly through the work of the committees that this development has been guided. It is highly desirable therefore that any of us who may be able from our experience to add to the sum of information brought out in these reports should do so. I sincerely hope that none will hesitate, or await urging, to "speak out in meeting" and make the discussion of these vital matters complete and instructive.

Ours is the essential business of furnishing urban and interurban transportation. This association represents the phase of that business that has for its particular field the rendering of service and the selling of service to the people of our various communities. We must sell that service to a sufficient number and in such manner as to fulfill our quasi-public nature and at the same time to make our service remunerative as a business.

Report of Secretary

Because it consisted only in an abstract of the minutes of its meetings the report of the executive committee was not read. In the report of the

secretary, Mr. Welsh called attention to the fact that the committee personnel is widely distributed geographically, making each committee fairly representative of the industry. Although it is not possible on this account for some of the more distantly located members to attend meetings regularly, their assistance and co-operation was obtained through correspondence. He emphasized also the difficulty of obtaining answers from questionnaires, and asked for increased co-operation to get results by this means. The number of answers received during the past year was discouragingly small in proportion to the number of questionnaires sent out. A statement was made also of the gains and losses in the number of members of the association during the year and the need of building up the membership was emphasized.

On the committee on resolutions, the president appointed J. E. Wayne, vice-president and assistant general manager York Railways, York, Pa.; M. McCants, assistant general manager Market Street Railway, San Francisco; C. L. Van Auken, editor *Electric Traction*. The committee on nominations was composed of C. E. Morgan, vice-president and general manager Brooklyn City Railroad; L. H. Palmer, general manager United Railways & Electric Company, Baltimore, and James P. Barnes, president Louisville Railway, Louisville.

The report of the committee on traffic regulations was read by H. B. Flowers, president New Orleans Public Service.

Traffic Regulations

The committee on traffic regulations, at the one meeting held during the year, decided that the committee should reinvestigate traffic conditions throughout the country. The effect of parking especially should be noted, as well as steps taken by various municipalities to cope with it.

As the result of this study it has been found that congestion of traffic has increased everywhere. There is scarcely an incorporated village or hamlet that has not its traffic problem the same as the cities of the first class. In each case it is strictly a local problem, but the statement for each is the same, "How may we best utilize our streets, roads and highways to handle the constantly growing traffic which must use them?"

Street cars carry the bulk of passenger traffic. In fact, the average surface car line more than carries the population of the community which it serves daily. That fact should be recognized in all regulations affecting traffic in which street cars are a part.

We have passed through the time of the making of traffic regulations. Many of the rules necessary to the rapid and safe movement of traffic are now almost as universally applied, understood and obeyed as the rule of keeping to the right.

The many remedies for eliminating congestion have been or shortly will be of like universal application. Semaphores, safety zones, abolition of left-hand turns, loading platforms, traffic lanes, each and every traffic-handling device, together with the making uniform of rules in connection with their use, have helped eliminate accidents, insure a more rapid transportation and a greater public convenience, but neither singly nor together have they been able to prevent traffic congestion.

The communities served by the electric car are not fully served if the traffic congestion in these communities makes impossible the safe operation of a rapid service, and while it may be sufficient answer to criticisms of the service to say that it is the best possible under traffic conditions, the committee feels that the industry might well aid in the elimination of that congestion.

It might well have its part in the education of the public. It might place its facilities as a national industry for the gathering of technical advice and practical experience at the disposal of the various communities which its members serve.

As individuals and good citizens the operators of this utility avail themselves of their membership in the association to place at the disposal of their communities such information as the association might have bearing on that particular community's problem.

As an example of the necessity for keeping in contact with traffic conditions throughout the country, the committee cited two experiments now under way in Detroit which, if successful, will be of great interest to the industry and especially to transportation men.

In Detroit an ordinance has been enacted compelling a full or boulevard stop by all vehicles before entering or crossing some fifteen main thoroughfares. The second experiment is the making of scheduled stops in blocks of three, which is perhaps the largest elimination of stops on purely local service heretofore attempted.

The reporting to the industry of the conditions which led to these two experiments in terms of traffic and the results obtained might, in the opinion of the committee, be of the same value to the operators of street cars as the fixing of a new standard in something purely mechanical.

The report was signed by Paul E. Wilson, H. O. Butler, W. H. Maltbie, F. R. Cogswell, Frank P. Edinger and H. B. Flowers, chairman.

Following the presentation of this report, George B. Anderson, manager of transportation Los Angeles Railway, spoke of the importance of educating the public along the lines mentioned in the report of the committee. The two chief objects of traffic regulation should be to safeguard life and to expedite movement, and all provisions in traffic ordinances which aim at objects other than these must be regarded as useless encumbrances.

Mr. Anderson emphasized the point that the great mass of street car riders are unorganized and are therefore handicapped and at a disadvantage in securing the passage of such ordinances as are for their own interests. On the other hand, merchants, automobilists, and so forth are united in organizations of various sorts which are able to influence the passage of such ordinances as they desire. Railways should therefore pay particular attention to the education of the public to the end that they shall see that their own best interests are served by the inauguration of such traffic regulations as will benefit the railway.

Additional discussion of this subject was contributed by J. R. Bibbins, consulting engineer, Washington, D. C. He spoke of the rapid increase of population in our urban centers, and the even more rapid increase in the riding habit. Properly to handle the transportation problem in the face of these circumstances will require the most expert attention to traffic regulation.

Both Mr. Anderson and Mr. Bibbins brought out the point that the removal of street railway tracks is often advocated as one cure for the transportation situation. Mr. Anderson particularly emphasized the falsity of this idea by figures, which showed in Los Angeles that the automobile traffic on streets without railway tracks was only about 40 per cent greater than on those streets where tracks existed. The ultimate result that could be hoped for by the removal of the tracks, therefore, would be to increase the capacity somewhat less than 50 per cent. This would fall far short of being a real solution. Mr. Bibbins, too, said that this was not the answer, and suggested that the T. & T. Association was the logical means of bringing home to the public attention the falsity of such reasoning. With the facts before them people would be less ready to listen with any degree of patience to the appeal of the demagogue.

The report of the committee on merchandising transportation was presented by Samuel Riddle, vice-president Louisville Railway.

Merchandising Transportation

The report of the committee on merchandising transportation is divided into five general subjects: (1) Weekly passes, monthly nickel permits, commutation tickets; (2) merchandising by advertising; (3) utilizing employees for selling; (4) car development for merchandising; (5) developing passenger, freight and express business.

No space was used in the report to urge member companies to continue their efforts to merchandise transportation, as it was considered superfluous. The committee contented itself with studying what companies have actually tried out, and a summary of these studies was presented.

Weekly Passes, Monthly Permits, Commutation Tickets—The use of the weekly pass and the monthly permit was greatly extended during the year. Where one company tried these meth-

ods in 1919, one in 1920 and four in 1921, more than a score put the pass or permit into use during 1922, and in the first four months of 1923 six other companies had inaugurated the use of one or the other. On May 7, 1923, according to a compilation made by the American Electric Railway Association, there were thirty-five companies which were then using, or had used, the weekly pass.

A table presented in the report shows that the introduction of the weekly pass, with but three exceptions among the companies furnishing information, has been followed by a reduction in the average fare per passenger. A point upon which the committee endeavored to obtain information was whether or not the use of the pass or permit had increased riding and the effect it had had on revenue. Exact figures were impossible to obtain, but the general experience seemed to be that it had stimulated riding to some extent. With one exception, all the companies had used newspaper advertising extensively at the time the concession was made, and most of them continued this form of advertising intermittently. The favorite method of distributing the pass is to have it sold by the conductors on the cars. Approximately half of the companies also sell the passes and permits at their offices.

Experience with Weekly Pass

Another pre-eminent advantage is that the pass and permit everywhere seem to have created a better sentiment toward the company making the experiment. In corroboration of this statement the following expressions of opinion received from member companies are quoted:

"The weekly pass speeds up operation, avoids arguments over fares, stimulates riding in non-rush hours, reduces work for trainmen and creates a friendlier feeling."

"The weekly pass has eliminated jitney competition and made the company more popular."

"The advantages for us have been good will and no request for a lower fare."

"We think we have received the good will and co-operation of the public by the reduction in fare made possible."

"The advantages are an increase in non-rush hour riding, an increase in the riding habit, and the fact that it does not necessitate additional service, creates good will and gets a dollar from a man who otherwise would pay less."

"In times past the persons who used our cars most frequently had the most complaints to make about our service. such patrons seeming to feel that their heavy outlay for fare gave them a better right to kick. The weekly pass has made this class of patrons our firm friends, and even a hostile mayor is not able to get a rise from the public in response to his denunciation of us."

Merchandising by Advertising—Merchandising transportation by the printed word is growing very rapidly in the electric railway industry. The number of companies advertising, in one form or other, is now, according to the report of the committee, approximately 300, whereas three years ago not one-tenth of this number were using advertising. More, however, should be advertising.

In studying the advertising that electric railway companies are now doing, it was found that there are four mediums being utilized to varying degrees. These are newspapers, display cards inside the cars and car-window posters, display cards or dash signs outside the cars, and weekly, semi-monthly or monthly publications in pamphlet form, to be placed in racks or holders inside the cars.

The use of display signs inside the cars has been found very effective in bringing to the attention of passengers matters of policy, measures of safety and details of operation practices. All this tends to create a psychological reaction in favor of the railway.

Many companies utilize window signs for good will advertising. This space is the most preferred of all positions, because it is possible, by printing the signs on both sides, to reach not only the car rider but persons outside the car who are walking or riding in other vehicles. This space is always available to companies, without cost, for it is never included in contracts with car-advertising companies.

The committee expressed the belief that no more valuable means of stimulating travel exists than by the use of properly worded and attractive dash signs. These may be utilized to give publicity to every legitimate form of amusement, public and church gatherings and special events.

Many electric railway companies are now providing weekly publications for car riders in "Take One" boxes. It is advisable for such publications to be in small pamphlet form, and they should carry an amusement directory of the theater attractions of the city. Experience indicates that they should not be filled with company propaganda.

Utilizing Employees for Selling—"The handling of the car by the motorman and the treatment of the passengers by the conductor play a most important part in so satisfying patrons as to develop future business." The truth of the foregoing statement is so well established that it requires no further exposition. The real crux of the problem, however, is the manner in which motormen and conductors can be trained to be efficient, courteous, neat and generally pleasing to the patrons with whom they have to deal. The biggest obstacle to be overcome is the fact that the ordinary platform worker does not himself know what his company's problems are. One southern railway has done much to gain the good will of its public by means of the appointment of a committee of nine trainmen to study the merchandising of service. The committee suggests that many members of the association, by following in the footsteps of this southern railway, may improve the manner in which they are utilizing their employees for selling.

Considered purely from the angle of the effect that the platform man has on selling transportation, however, the committee believes that there are four qualities every good conductor should possess, and that there are three that every good motorman should have. These, it is believed, railways have a right to demand of their employees, and, what is more important, a chance of obtaining to varying degrees. These qualities for a conductor are good nature, personal neatness, general knowledge of the streets and buildings in his city and intensive knowledge of the part of the city through which his own line operates, and a good voice. For the motorman, the first two qualities are the same and the third is ability to start, operate and stop his car smoothly and easily.

The committee believes that the knowledge of what to do is not sufficient without the desire to do it, nor is the desire sufficient without the knowledge of what to do. The report outlines a list of eighteen possible cases where friction was likely to occur between the trainmen and the public, and suggests, in a general way, the best method of handling each case. Platform men should be impressed with the fact that the passenger is always right. Controversies arise in actual practice more frequently over transfers than over any other one thing. If the conductor and the passenger both are persistent, one of two things happens. The passenger either pays another fare or is put off the car. In either case, the company has not only made an enemy of the person affected but, because of some peculiarity in human nature, is certain to have alienated the sympathy of the majority of those who heard the controversy. It is better for the conductor to listen to the passenger courteously and then, even though the passenger is wrong, politely to drop the argument.

Car Design from the Standpoint of Merchandising Transportation — The report describes several pronounced tendencies in the design of new cars. There is a tendency to greater comfort, with easier entrance and egress, more comfortable seats of greater length and width, with a better type of upholstering, greater distance between seats, armrests, better lighting, low floor levels requiring few steps to the car floor, ramps rather than steps between platforms, better windows, with plate glass in some cases, and a free, open outlook from all sides, more pleasing interiors and exteriors, and the elimination of signs, often the elimination of advertising as well.

Another general tendency is toward lighter weight for economy. This, fortunately, fits in well with the tendency for comfort, as a low-level floor allows of a lighter truck and less swaying from side to side. The lighter truck also allows the use of lighter motors and simpler control. This all, in turn, makes possible faster acceleration and braking, which then makes possible the maintenance of scheduled speeds with lower, free-running speeds, a desirable situation from many standpoints.

Features of the most recent cars of a number of railways are described in some detail. The results of a number

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of questions sent out to member companies are also presented. One of the most interesting is the indication that the standard Birney safety car does not meet with great favor, unless modified in certain respects. The principal feature is that double doors are required and the cars should be made more substantial.

There is a tendency to eliminate mandatory or "rule" signs altogether. In such cases the personal conduct of the passengers is left up to their inherent decency. Smoking in the rear of the car during the part of the year when the windows are all open may take place in such instances.

Another point made is that center lighting is very satisfactory when shades of the proper design are provided. The glare is less and the reflection on the motorman's window is less on open vestibule cars.

Developing Passenger, Freight and Express Business—In general, the answers to the committee's questionnaire on this subject were not satisfactory. No attempt was made to set forth the methods used on urban railways to stimulate passenger business. Only the methods of the interurban line are mentioned. The replies indicate that time-table folders are considered the best form of publicity. Other forms used are descriptive and lithographic circulars, newspapers, car cards, billboards and posters.

The main features in building up passenger traffic are fast, reliable service, good, well-painted cars kept clean and sanitary, a good roadbed, courteous crews on trains and agents that can give reliable information and prompt service.

The report was signed by H. H. Brown, G. Sabin Brush, Frank L. Butler, R. F. Carbutt, John F. Collins, John A. Dewhurst, Samuel W. Greenland, M. McCants, A. W. McLimont, Richard Meriwether, E. B. Moore, F. D. Norviel, O. A. Smith, T. H. Tutwiler, C. L. Van Auken and Samuel Riddle, chairman.

Discussion

S. W. Greenland, vice-president and general manager Indiana Service Corporation, outlined the study which was made of the weekly pass. Walter W. Jackson, consulting engineer, and W. H. Boyce, general manager Beaver Valley Traction Company, discussed this phase of the report. Mr. Jackson analyzed some of the reasons why the weekly pass after being installed has been retained on some properties and discarded on others. Several fundamental requirements were listed as being necessary to a successful pass installation. The community must be of a size to allow the encouragement of non-necessity riding; a sufficiently frequent service must be provided to build up more general short riding; the program for the installation of weekly passes should also include an improvement in the service; the pass must not be too high in price and it must be effectively and continuously advertised.

Several examples were given of instances where the pass was installed and then abandoned, either because the property was so small or was in such condition that the pass could not save the situation. Failure to apply the proper kind of pass to meet a specific combination of conditions was also pointed out as a cause for the discontinuance of the weekly pass scheme on some properties.

Mr. Boyce discussed the results obtained with the pass on the Beaver Valley property and described the zone system in use. A progressive scheme of monthly "bargain" sales, in which the three-zone or "system" pass is sold at reduced rates, illustrates in a striking manner the application of general merchandising principles to the sale of transportation. A reduction in the price of the system pass from $2 to $1.50 doubled the sales of this pass in a very short time.

The work of the committee on merchandising by advertising was put before the association by Frank L. Butler, general operating manager, Georgia Railway & Power Company. The discussion of this phase of the subject emphasized the necessity for intelligently planned advertising. Contact with the public by frequent insertions was held to be important. The practice of having advertising copy prepared by the same department which handles complaints was recommended as a proper means of getting the correct viewpoint into the advertising copy. It was also held that copy written with a view to developing human interest stories maintains a proper contact with the public and gives the desired results. This same idea was brought out further in the discussion by the use of the expression, "The advertising should personalize the service."

In addition to reading excerpts from the portion of the report dealing with the utilization of employees for selling, M. McCants, general manager Market Street Railway, San Francisco, discussed the report. Mr. McCants took exception to the unqualified use of the slogan, "The Passenger Is Always Right." He maintained that this policy may frequently lead to the adoption of the easiest way out of a controversy rather than the best way from the standpoint of dividends, as well as good will. Standardization of verbal expressions to be used by platform men in avoiding passenger disputes was held by Mr. McCants to be of considerable help in connection with this difficult matter. He emphasized the fact that the interest of the men must be aroused.

The difficulty in detecting the personal characteristics of new employees in the employment office was mentioned, and it was explained that proper training and management, by helping to keep satisfied employees, go a long way toward maintaining the good natured contact with the public which is so essential to proper merchandising.

In connection with the report of the subcommittee on development of car design for proper merchandising, John W. Dewhurst, railway engineer of the public utilities management department, Day & Zimmerman, Inc., gave a brief abstract and added several comments on additional phases of the subject. He emphasized the importance of the elimination of noise in making the car ride more comfortable. H. H. Adams, superintendent of shop and equipment Chicago Surface Lines, stated that car design for proper merchandising involves an extremely broad and interesting subject. He discussed the importance of low steps and liberal platforms in facilitating passenger movement, and also described briefly the new automatic door which has been applied to one-man cars in Chicago. L. H. Palmer, general manager United Railways & Electric Company, Baltimore concurred in Mr. Adams' remarks and also indicated that proper lighting and heating are essential to the maintenance of passenger comfort.

W. G. Stuck, superintendent of equipment Kentucky Traction & Terminal Company, read a discussion on this phase of the report and also emphasized the importance of proper heating and lighting in making satisfied passengers. Comfortable seats, pleasing paint and finish, and proper arrangement for the movement of passengers, were additional factors that were discussed.

Many comments were made on the subject of building up freight and express business which was abstracted briefly by F. D. Norviel, general passenger and freight agent United Traction Company of Indiana. Mr. Norveil said that the key to building up freight business is proper service, and that although solicitation and advertising are necessary to accomplish this purpose, they must be backed up by real service to the shipper.

Schedule Should Fit Traffic

E. H. Maggard, vice-president and general manager Petaluma & Santa Rosa Railroad, read a prepared discussion of this subject. He felt that service, personal solicitation and a good local agent are the three most important factors to be considered. In addition, the freight schedule must fit the different classes of merchandise offered for shipment. The adoption of appropriate slogans in advertising both through paid mediums and by signs on the cars and buildings of the property were held to be of considerable help in building up business. Proper terminals and facilities for handling bulky freight must be provided. Six years of experience in the application of these principles was given as the reason for the growth in freight business from 60,000 tons annually to 210,000 tons annually on the property.

This subject was further discussed by Victor S. Curtis, secretary and general traffic agent the Connecticut Company, and C. H. Hardesty, general traffic agent Monongahela Power & Railway Company, who described various practices which had been used on their respective properties for building up both passenger and freight business. Mr. Hardesty reported favorable results from the sale of party tickets at reduced rates for groups of ten or more passengers. T. J. Jay, freight traffic

manager Pacific Electric Railway, described the results obtained from the establishment of joint freight rates with connecting steam lines. A growth in freight business from $1,000,000 annually in 1913 to $6,000,000 in 1923 was attributed largely to the effect of this arrangement in inducing industries to locate upon the line of the electric railway property.

Tuesday's Sessions T. & T.

The Tuesday afternoon session of the committee on transportation and traffic commenced with the report of the nominating committee, in which the following names were proposed:

President, J. K. Punderford, vice-president the Connnecticut Company.

First vice-president, T. C. Cherry, president Auburn & Syracuse Electric Railroad.

Second vice-president, G. H. Clifford, vice-president Northern Texas Traction Company.

Third vice-president, J. V. Sullivan, assistant to the president Chicago Surface Lines.

Executive committee, Edward Dana, general superintendent Boston Elevated Railway; W. H. Boyce, general manager Beaver Valley Traction Company; E. M. Walker, president Schenectady Railway, and Samuel Riddle, vice-president Louisville Railway.

The nominations were then closed and the secretary cast a unanimous ballot for those named.

The report of the committee on one-man car operation was presented by J. P. Pope, general manager Kentucky Traction & Terminal Company.

One-Man Car Operation

In its report the committee states that its scope, as originally drafted, was to apply to suburban and interurban transportation only, but that since city and suburban transportation are so closely allied, wider latitude should be given to cover all branches of the railway industry.

The committee states that, on the whole, the operation of one-man cars differs but little from that of two-man cars. But few minor changes in the rules are necessary, most of which are necessitated by local conditions. The one-man operator has to do his own switching, has to collect and register the fares and has to handle train orders by himself.

For speeding up transporation on interurban systems, the committee states that fare register registration is the quickest and most feasible method of operation; in city transportation automatic transfer machines should be considered carefully.

As to the economics of the one-man car, the committee states that the savings may be considered under four heads—platform expenses, track costs and maintenance, power costs and accident costs.

The saving in platform expense is evident, even allowing for increased compensation.

Track costs depend on the use of light-weight cars. No attempt has been made to compile information on track savings, as but few companies are operating such light-weight equipment in interurban service, and the operation has not been sufficiently extended to arrive at an analysis of the savings. Tie spacing can be increased materially. The light-cars will not crush the ties, thus increasing the life of the track structure. Less maintenance of the track will be needed, and the decrease in cost of this item should be very large if light-weight equipment is used exclusively.

Rebuilding of heavy two-man cars for one-man operation will result in no saving of power consumption, while with modern light-weight cars the saving will be very marked.

It is the opinion of the committee that the accidents occasioned with one-man cars are not in excess of, and probably are less than, those with two-man cars for the same mileage.

The committee states that the advantages of the one-man car are: Frequent service, maintaining reasonable rate of fare and safety. With regard to danger of railroad crossings, the belief is that greater safety results from having the responsibility of flagging railroad crossings placed upon the one-man operator, rather than having it divided.

It is recommended by the committee that a joint committee of the Transportation and Traffic and Engineering Associations be appointed to make a number of designs of a standard one-man car.

The report was signed by J. E. Duffy, W. E. Wood, A. Swartz, L. G. Van Ness, A. L. Reynolds, H. C. DeCamp, K. A. Simmon, N. W. Bolen, G. H. Clifford, T. C. Cherry and J. P. Pope, chairman.

In discussing this report, C. E. Morgan, vice-president and general manager Brooklyn City Railroad, spoke of the success of one-man operation in that city. It was found that the average trainman preferred to operate a car alone rather than to have an additional man to collect fares during the rush hour. On thirty-eight lines in Brooklyn where one-man cars are operated there has been necessary an addition to the running time in only two cases, although during the same period every two-man line has had to increase its running time. One-man cars operate on the same streets with cars of other types through the heaviest kind of traffic. Mr. Morgan disagreed with the report of the committee in so far as saving power is concerned and said that there was a very noticeable saving with converted one-man cars in Brooklyn.

J. B. Stewart, Jr., general superintendent Youngstown Municipal Railway, described the method by which large cars of various types have there been converted for one-man operation.

President Emmons of the American Association expressed his gratification at the great success of the convention and said that he thought it was in no small measure due to the interest displayed by the members of the various affiliated associations.

Continuing the discussion of one-man car operation, Mr. Riddle described an interesting method of numbering stations on his property. This was done for the sake of simplifying the arithmetical calculation necessary to compute the fare.

The report of the committee on bus operation was presented by W. J. Flickinger, assistant to the president of the Connecticut Company. Mr. Seely asked Mr. Punderford, sponsor for the committee, to preside during the presentation of the report. An abstract of the report follows:

Bus Operation

It is generally conceded that there is a place in the present transportation fabric where the motor bus can be used to advantage. Public authorities have gradually brought order out of the chaotic conditions which the competitive jitney introduced in the transportation field seven or eight years ago, and many communities have now accepted the motor bus as an auxiliary to existing transportation facilities. The electric railways are also becoming increasingly interested in its use in meeting the full requirements for transportation in the territory which they individually serve.

The report of the committee consists largely of a review of what is being accomplished by various member companies operating motor buses. Information is presented to show the class of service operated. This indicates that, of seventeen companies reporting, seven operate supplementary service, twelve feeder service and nine independent service. Looked at in another way, seven of the companies operate exclusively on city routes, four on suburban lines, two in interurban service, two in city and suburban service, one in city and interurban service and one in city, suburban and interurban service. The base operating schedule calls for 185 buses, while the peak requires 225 vehicles. On the average, each bus travels 134 miles per day, while the individual mileage reported varies from 70 to 216 miles.

An analysis of the reasons for inaugurating bus service indicates that all of the seventeen operating companies are quite closely following the principles laid down in the 1922 report of the committee. This means that if a railway company adopts the policy of providing all transportation needs in the territory served the possibilities of the bus as an aid to such policy cannot be overlooked. As for supplanting existing rail lines with bus routes, this

is a problem of economies, but it will be found that when rail lines with low earning power are faced with heavy rehabilitation or paving charges the bus can be used as a means of continuing service with an expenditure for equipment much below the cost of plant renewals or paving. A summary of the replies given as to the reason for bus operation shows that eleven undertook operation in order to hold a monopoly of transportation in the territory served, two companies have supplanted their rail lines with bus routes because traffic has failed to meet investment charges, two companies are using buses to provide a shorter and quicker route, one company operates buses to keep out competitors and, one has used buses to avoid excessive rehabilitation charges.

Types of Equipment.—The type of motor bus equipment used indicates the twenty-five-passenger bus to be the most favored, with the fourteen- and eighteen-passenger vehicle following in the order named. The type of chassis most commonly operated appears to be the White Model 5, which nine companies report using. Five companies have Reo and Republic, while four report Mack. Other types are not used by more than one company. Pneumatic tires are reported in thirty-one cases, and in nine cases duals are used on the rear wheels, while cushion or semi-pneumatic tires are used in only ten instances. Weights of buses per seat calculated from the table given in the report indicates as follows:

Passenger Capacity	Weight of Bus (Lb.)	Average Weight per Seat (Lb.)
13	4,950	380
14	3,000–7,200	215–514
16	4,350–5,500	272–344
18	4,500–9,000	250–500
19	8,430	444
20	6,000–7,920	300–395
21	7,000	333
24	6,480	270
25	8,130–10,000	325–400
27	6,100	226

Step heights on one-step buses vary from 14 to 20 in. from the ground to the tread of the first step with a riser of from 8 to 14 in. to the floor level. In case of a double step the second riser is 9 to 9½ in.

The committee in discussing design of vehicles says: "If we are going to sell to the public the idea that street railway companies should be given the opportunity to furnish the entire transportation service, the importance of having the proper equipment to provide the greatest amount of safety, comfort and convenience cannot be too strongly emphasized. It is pleasing to note that street railway companies are discarding the truck chassis and adopting the improved types as rapidly as the builders are developing them."

In the further development of the chassis, simplicity and accessibility should be the chief aim of automotive engineers. It should be borne in mind that ordinary running repairs are made without removing the body and, therefore, easy removal and replacement of parts from underneath the chassis should be made possible. It is very desirable that time out of service be the minimum. A unit repair system will best meet this requirement.

Consideration must also be given to the peculiar requirements of a vehicle operated in passenger service such as low center of gravity, clutch and gear designs for frequent stopping and starting, adequate and economical power, and spring suspension to give maximum riding comfort under varying load conditions.

This report does not touch upon body development. Each company, it is believed, will work this out according to its own requirements. In general, there seems no reason why the electric car body designs cannot be used as a base from which to develop a body which will give public satisfaction from the standpoint of safety, comfort and convenience. There will, of course, always be cases which will require specific treatment based on the particular transportation problem to be solved.

Operating and Maintenance Methods.—Where buses are operated as feeders or in conjunction with the railway service in any manner, schedules should be so laid out and maintained as to correlate the service from both facilities. This result can be obtained with the best economy if the same supervisory organization is responsible for both.

However, where a route is operated independently of the street railway service, it may be found desirable to supervise it with a separate organization.

Most of the street railway companies operating buses are doing so on such a small scale as not to warrant the increase in overhead and maintenance costs necessary if the repairs were entirely divorced from the electric car work. The committee believes, however, that this practice ceases to yield maximum efficiency and economy the moment the number of units becomes large enough to keep a separate corps of mechanics, inspectors and cleaners busy during a full working day. Bus chassis maintenance requires an entirely different line of training than that of electric car maintenance and if an attempt is made to spread the supervision and maintenance over both types of equipment, the maintenance of both will be unsatisfactory.

The body maintenance presents an entirely different situation. Bus bodies are now very closely following the type of construction used in electric car bodies and this work can be more efficiently and economically done by augmenting the regular body maintenance force sufficiently to take care of the additional equipment.

Several of the companies which have gone quite extensively into bus operation have either laid plans for or constructed garage facilities separate from those of the railway shop.

Rates of Fare and Fare Collection.—A comprehensive table showing both the railway and bus fare and the methods of collection is appended to the report. The majority of the companies are maintaining the same rate of fare on both the bus and the trolley car. Another tabulation shows that the cost of transporting a passenger by bus is greater than by trolley car, and the reasonableness of a higher rate of fare on the bus, particularly where the volume of traffic is so low that the railway will not produce sufficient volume of traffic to meet the cost of operation, or where the bus provides a more expeditious service than the trolley car.

Basis of Charging Depreciation.—None of the companies, by reason of short experience, is in a position to give definite information relative to the life of bus equipment. All of the depreciation is set up on a tentative basis with the idea of revising it, after experience, to the basis of actual conditions. So long as depreciation is recognized as a part of the cost of operation, it will make small difference under present circumstances whether it is figured on a straight line or mileage basis.

The cost of the original tires on the bus should not be considered a part of the amount to be depreciated. Theoretically the amount reserved out of revenues during the period a bus is operated should equal the original cost of the bus (excluding the tires) less its salvage or turn-in value. In all cases, where the experience is limited and the art is in a comparatively early stage of evolution, the amounts currently charged against the revenues and reserved may be considerably at variance with the actually sustained depreciation, but more extended experience will tend to improve the methods of calculating these charges.

Consideration must also be given to obsolescence and inadequacy, as well as wear and tear, in calculating depreciation charges. Physical depreciation, or the wear and tear of the bus, depends substantially on the following nine factors:

(a) The design of the bus.
(b) The quality of workmanship and material used.
(c) The character of maintenance.
(d) The efficiency of the driver.
(e) The grade and proper use of fuel and lubricating oils.
(f) The loads carried.
(g) The rate of speed.
(h) The character of service performed.
(i) The road conditions.

Because of these variable factors, it is difficult to suggest a standard practice for charging depreciation occasioned by wear and tear.

The factor of obsolescence, another element of depreciation, but not occasioned by wear and tear, should also be a matter of consideration, especially where there is likelihood of an appreciable advance in an art. At best, this is a problematical element and with respect to the bus at this stage of its evolution, at least, operators must apply

indefinite theories in their calculations if they attempt to estimate it.

There enters into this study, the practical consideration that many buses, if not all, which might be replaced in regular service by better developed units could be used in extra service as spares and in regular service on lines of smaller traffic demand; often the chassis and other parts of discarded buses lend themselves to further utility.

The factor of inadequacy, is also an element of depreciation. It is a burden which operates on the income in precisely the same way as obsolescence and is as difficult to measure. The factor of inadequacy in depreciation is substantially occasioned by the traffic demands. For example, a bus with a carrying capacity of twelve might take care of all or its share of the traffic today and later, because of increasing patronage, might have to be replaced with a bus with a carrying capacity of twenty-five.

Assuming that the replaced bus, or its parts, could not be further utilized the charges against income over and above the reservations made out of revenues for depreciation occasioned by wear and tear would reflect the factor of inadequacy. This burden may be kept within bounds or eliminated in at least two ways:

First—Buses found to be inadequate in regular service may be further utilized or their major parts utilized.

Second—In establishing bus service the size of the buses necessary to accommodate the varying traffic demand and traffic growth may be reasonably determined if careful consideration is given to the fact that the bus, because of the nature of its construction and the laws against overloading which are in force in many localities, is less elastic in capacity than the trolley car.

Because of these widely variable depreciation factors, each company must study its own situation and from future experience develop such method as will adequately provide for renewals or replacements as they become necessary.

Depreciation on garage building and equipment must also be taken into consideration. As these facilities do not vary considerably from those generally used in railway operations it is safe to assume the same rate of depreciation in both cases.

No standard practice for providing for accident liability is suggested. Of the seventeen companies giving information, six set aside from 3 to 6 per cent of their gross revenue. In other cases the requirements as prescribed by law, either state or municipal, are followed. Generally speaking, each bus carries $1,000 property damage and $5,000 and $10,000 liability insurance for any one injury or accident.

Attitude of Public—With one exception, the attitude on the part of the public favors bus operation by the street railway companies. This indicates, that the public is showing a preference for dependable service by a responsible, experienced transportation agency to that furnished by an agency whose interest in transportation ceases immediately when profits disappear.

It is also recognized that through supplementing the rail service with buses additional territory is being served which could never hope to receive service from individual bus operation without a guarantee of immediate profit.

A very influential New England newspaper goes right to the heart of the matter in an editorial which says in part:

"Certain kinds of public service are essentially monopolistic, and transportation is one of them. It is as unsound economically that there should be two gas companies, two electric light companies and two telephone companies as that there should be two street railway companies, or, which amounts to the same thing, one street railway company competing for the transportation business of the community with a number of bus lines serving precisely the same districts.

"The right solution is to give one company monopoly of transportation and then see to it that it fulfills all the obligations that go hand in hand with monopoly.

"The motor bus is a valuable agency of transportation, but it should be employed as an auxiliary to the system of transportation that constitutes the main source of reliance, instead of being a competitor of that system. As a flexible unit its primary purpose should be to serve territory not at present served by the street cars."

The tabulation of operating results presented represents a picture of what may be expected in the furture. Certain elements of cost are as yet indefinite. None of the companies has been operating buses much longer than a year, consequently, their maintenance costs have had an advantage from the fact that their equipment was new and did not require heavy expenditures for repairs and renewals. It is quite possible also that the change from the truck chassis to one designed for passenger transportation may result in a decrease in this item.

So far the bus has had the advantage over the electric car by reason of the fact that the roadbed has been provided and maintained out of the general tax fund, but as the question of commercial use of highways is at present being given serious consideration throughout the country, it is entirely probable that the item of taxes will sooner or later be materially affected through changes in methods of taxation.

The most important factor to bear in mind in comparing the cost of bus operation with that of electric car operation is that, by reason of the smaller seating capacity of the bus, the cost per passenger is considerably higher than for electric car operation. The average cost per bus-mile, including

OPERATING RESULTS PER BUS-MILE

Company	A	B	C	D	E	H	I	L	K	O[1]	O[2]	R	Weighted Average All Companies,
	1-1-23 to 5-31-23	1-1-22 to 3-31-23	7-1-22 to 3-31-23	5-26-22 to 3-31-23	1-1-22 to 3-31-23	3-1-22 to 3-31-23	1-1-22 to 3-31-23	12-1-21 to 11-30-22	7-3-22 to 3-31-23	7-15-22 to 12-31-22	1-1-22 to 12-31-22	4-1-22 to 3-31-23	
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
Transportation revenue	26.50	21.18	28.67	13.42	25.99	25.25	19.23	6.11	20.84	29.79	17.41	26.28	21.18
Other revenue	.....	.....	.60	.04	.....	.02	.06	.....	.04	.86	.51	.....	.21
Total revenue	26.50	21.18	29.27	13.46	25.99	25.27	19.29	6.11	20.88	30.65	17.92	26.28	21.39
Maintenance (excluding depreciation and tires)	3.83	1.95	4.50	1.62	3.02	6.56	4.00	2.62	5.42	6.71	2.97	2.61	4.20
Tires	1.50	1.94	1.49	1.32	.85	2.48	2.43	1.87	1.65	2.50	1.51	.47	1.88
Depreciation	3.00	2.68	3.88	3.25	2.29	3.96	2.67	7.19	8.05	2.87	2.68	1.03	3.08
Wages of bus operators	7.68	5.65	6.49	6.09	7.03	6.91	6.05	6.43	5.64	4.55	3.82	6.04	5.74
Other conducting transportation expenses	4.83	3.26	10.19	5.84	7.18	7.67	5.06	4.60	7.01	3.33	3.29	7.21	5.95
Injuries and damages, insurance, other general expenses	3.25	2.52	3.44	.77	6.56	3.04	3.93	.57	.74	5.32	3.64	2.56	3.10
Total	24.09	18.00	29.99	18.89	26.93	30.62	24.14	23.28	23.51	25.28	17.91	19.92	23.95
Net operating revenue	2.41	3.18	*.72*	*5.43*	*.94*	*5.35*	*4.85*	*17.17*	*2.63*	5.37	.01	6.36	*2.56*
Taxes	.92	.25	2.10	.60	.15	.24	.92	.65	.05	.18	.40	.49	.65
Operating income	1.49	2.93	*2.82*	*6.03*	*1.09*	*5.59*	*5.77*	*17.82*	*2.68*	5.19	*.39*	5.87	*3.21*
Operating ratio	90	85	102	140	104	121	125	381	113	82	100	76	112
Bus-miles	35,124	70,371	443,602	226,798	80,596	653,249	1,126,189	108,017	479,303	144,605	806,354	234,107	4,373,191

Note: Deficits are shown in *italics*.

taxes and estimated depreciation, based on the figures shown in the accompanying table is 24.6 cents. It is fair to assume the average seating capacity per bus to be twenty-five. On this basis, the cost per seat-mile of bus operation is 0.98 cents.

Data obtained from ten companies operating one-man trolley cars, exclusively, shows an average cost per car-mile of 25.7 cents, including depreciation and taxes. The carsof these companies have an average seating capacity of forty-two, resulting in a cost per seat-mile of 0.61 cents. On the basis of this comparison, the cost per seat-mile of bus operation is approximately 60 per cent greater than for the one-man electric car. These figures, however, do not include a return on the value of the property.

If this were computed on the basis of carrying capacity, the increase in bus cost per passenger would be greater by reason of the greater elasticity of the electric car. This is particularly true in localities where the number of passengers above the seating capacity of buses is fixed by law. An example of this is the state of Connecticut, where the law allows only two passengers above the seating capacity.

This not only means an additional investment which is idle the greater part of the time, but because of the smaller seating capacity of the bus, it will require at least three buses to furnish the same number of seats as two trolley cars.

The committee reports it is unable to furnish any historical data of value on trackless trolleys as experience by street railway companies is confined to four companies operating a total of seven buses and two in Canada operating a total of eight, none of which has been in service a sufficient length of time to furnish reliable data.

Another year, however, should be fairly productive of information, as the committee is informed that installations are contemplated at Richmond and Norfolk, Va.; at Philadelphia; at Rochester, and at Detroit.

The report was signed by R. R. Anderson, A. C. Blinn, W. H. Burke, A. H. Ferrandou, R. N. Graham, J. M. Ives, H. A. Mullett, L. H. Palmer, T. S. Wheelwright, J. K. Punderford, Edward Dana and W. J. Flickinger, chairman.

H. W. Alden, president of the Society of Automotive Engineers, read a written discussion of the report of the committee on bus operation, which is abstracted elsewhere in this issue.

V. E. Keenan, superintendent bus division, United Electric Railway, Providence, R. I., referred to the report as a fair and impartial treatment of a subject which has been the source of considerable controversy in recent years. The progress made by manufacturers of bus equipment in recognizing the limitations of the customary type of truck chassis for bus work augurs well for further development in bus design. The need for standardization and the use of interchangeable parts was referred to, and the advantages of co-operation between the Society of Automotive Engineers and the A.E.R.A. were emphasized. The desirability of improvements in bus design to decrease the rate of depreciation and give a longer life were also pointed out. Referring to the convention number of the ELECTRIC RAILWAY JOURNAL, Mr. Keenan agreed that close study of the results obtained in the manufacture of pleasure vehicles by the use of interchangeable parts can be profitably applied to bus design.

The steps taken by the Washington Railway & Electric Company in installing bus service as an auxiliary to its present electric railway system were reviewed briefly by President W. F. Ham. He stated that the bus can now be used in many situations where it is not profitable to build a new car line, or can be applied where it is not profitable to rebuild an old line. The advantages of the bus under certain conditions for furnishing service on extensions of existing railway lines were also mentioned by Mr. Ham. He said, however, that a transfer charge between bus and cars is very desirable.

A brief description was given by G. B. Anderson, transportation manager Los Angeles Railway, of the steps taken by his property in the establishment of bus lines to forestall competition by independent companies. He said that although a transfer privilege is in effect between buses and cars, a fare of 10 cents is charged if the passenger rides on a bus during any part of his journey.

L. H. Palmer, general manager United Railways & Electric Company, Baltimore, amplified the report relative to the operation of trackless trolleys on his property by stating that the operating costs for these vehicles were increasing rather than the reverse. He expressed the opinion that trolley bus design is far from perfected and that considerable development is necessary before it will become a practical transportation vehicle.

In concluding the discussion, Mr. Flickinger, chairman of the committee, maintained that comparison of operating costs as between buses and rail cars must be made on the basis of cost per seat, in order to give a true picture of the actual results that could reasonably be obtained.

Wednesday's Session T. & T.

The joint session of the Transportation & Traffic and Claims Associations was called to order promptly by President Seely of the former association. The report of the committee on accident prevention was presented by H. B. Potter, co-chairman. He pointed particularly to the answers to the questions regarding the most hazardous elements in the operation of cars.

Joint Committee on Accident Prevention

The study made by the committee on safety work last year was continued by a committee under the name of the committee on accident prevention, which analyzed accidents with reference to causes and the relative number in different areas on each property. It was determined that better concrete results would be obtained by the committees on accident prevention of the two associations carrying on the work jointly.

The duties of the committee have resolved themselves into two important studies: (1) Analyze accidents. (2) Ascertain the extent of the co-operation between electric railways and various public bodies.

The joint committee dropped the question of outlining the manner of conducting safety week campaigns for the reason that it is the feeling of the members that the safety week idea has been overdone in the past and that accident prevention has now resolved itself into an all-the-year-round endeavor. There is a great deal of data on this subject on file at the headquarters of the National Safety Council and the organization of the safety week has been fairly well standardized.

As a result of questionnaires sent out to member companies the joint committee has obtained some extremely interesting information. The committee feels that if the facts presented in this report will serve as an inspiration to the member companies for greater effort along the lines of accident prevention in the future, its work will have been well accomplished.

Analysis of Accidents of 113 Electric Railways — The committee received a response from 113 electric railway properties situated in thirty-nine states and the Dominion of Canada. These properties represent 27 per cent of the electric railway mileage, 25 per cent of the gross receipts and 31 per cent of the passengers carried. The figures obtained are, in the opinion of the committee, fairly indicative of the trend of accidents in the years 1920, 1921 and 1922.

The committee has ascertained from authorities in other lines of work that the year 1922 was a year of high accident rate in industry as a whole, whereas 1921 was a banner year from the accident standpoint.

The results of our investigation, generally speaking, show that the electric railways as a whole had a high accident rate for the year 1922 as compared with 1921 as far as accident frequency is concerned, but the total cost to the railways shows a great decrease, and, further, the miles operated in 1922 exceeded 1921, which in turn exceeded 1920, and passengers carried in 1922 exceeded 1921. These results should be

extremely encouraging to the electric railway industry.

The following totals are obtained from the answers to twelve questions submitted to the 113 electric railways:

	1920	1921	1922
Total number of all accidents	220,950	204,034	214,563
Total number of employees injured	13,523	12,777	13,183
Total cost of claims, injuries, damages, including costs and payments connected with operation, claims and safety departments, welfare and workmen's compensation inclusive of legal, medical and private investigations	$9,009,381.75	$7,759,852.86	$7,472,731.19
Total accidents in which motor vehicles were involved	79,262	79,808	89,582
Total number of car collisions	10,831	7,216	7,367
Total number of fatalities, all causes	582	496	474
Gross income, all operations	$280,503,326.20	$281,774,993.45	$279,433,916.10
Number of car-miles operated	608,810,174	611,111,592	626,944,541
Average total number of employees in service, all departments	89,844	90,161	90,920
Number of passengers carried, free and transfer	4,783,667,505	4,558,735,675	4,594,457,155
Number of cars operated	16,075	16,011	16,265
Miles of track	11,576.11	11,887.17	11,889.41

The above results of accident prevention work are particularly interesting when carefully analyzed. For instance it is assumed that the total number of accidents given above are the total number of accident reports received which may or may not have involved cost to the company or real injury to the person or property. In the last analysis, the item which most clearly demonstrates the results of accident prevention is the third item above, showing the total cost. This total cost in 1922 was $1,350,000 less than in 1920, or approximately 16 per cent. In this connection the following figures are extremely interesting:

	1920	1921	1922
Cost of accidents per 10,000 car-miles operated	$148.00	$127.00	$119.00
Cost of accidents per 100,000 passengers carried	188.00	170.00	163.00
Cost of accidents, percentages of gross earnings	3.2%	2.76%	2.68%
Average cost per accident reported	$42.20	$38.00	$34.80
Number of accidents reported per 10,000 car-miles	3.39	3.32	3.42
Number of accidents reported per 100,000 passengers carried	2.20	2.04	2.14

Fatalities—Various public authorities and accident prevention organizations in the past have laid considerable stress on the results obtained by accident prevention in reducing the number of fatalities. The committee would call to your attention especially the results obtained by these electric railways in reducing the number of fatalities, which in 1920 were 540, to 471 in 1921 and 450 in 1922.

What Causes Accidents — The committee submits causes of car collisions, alighting and boarding accidents, persons struck by car, collisions with other vehicles, submitted by the 113 companies in answer to questions sent out by the committee.

The most hazardous element in the operation of cars was stated by various operators to be streets car-auto vehicular collisions; automobile traffic; street crossing on down grades on paved streets; monetary hazard; step accidents; violation of operating rules and slippery rails; traffic congestion; grade crossings; hills, snow, ice and cold weather; the human element; railroad crossings, fog and cows on track; narrow streets; slick rails.

Co-operation Between Electric Railways and Various Public Bodies, and What Has Been Done Toward Accident Prevention Through Special Methods Introduced by Member Companies — A sub-committee was appointed to obtain this information and it confined its questionnaire to three questions which, with replies received from the company membership of the association, are as follows:

Q. 1. Have you adopted special methods for the reduction of accidents on your property, by means of:

(a) Adoption of a code of safety rules? To this question forty-one members answered No, and forty-one answered Yes.

(b) By the appointment of a safety director? To this question, forty-nine answered No, and thirty-three Yes.

(c) By holding periodical safety meetings? To this, thirty-five answered No, forty-seven Yes.

(d) By the formation of a safety committee? To this, thirty-four answered No, forty-eight Yes.

Q. 2. In what manner, if any, has the chamber or commerce or other civic bodies in your city assisted in an organized way in helping you to carry on effective safety work in your community? Replies received from forty-five member companies indicated that local chambers of commerce or other civic bodies had furnished no special organized assistance while thirty-seven member companies reported that the chambers of commerce in their cities had in various ways assisted in an organized way in furthering the cause of accident prevention.

Q. 3. Is there in your city a local safety council, and if so, to what extent has it co-operated with the various departments in the effort to reduce accidents? Forty-nine member companies reported that in their cities there was no safety council; thirty-three companies reported that there is, and that the same is co-operating fully in accident prevention work.

The report was signed by F. W. Mulford, F. H. Warren, M. W. Bridges, Charles W. Chase, James Harmon, S. B. Irelan, A. W. Koehler, C. E. Morgan, R. M. Reade, Harry Restofski, E. M. Walker, Alba H. Warren, J. V. Sullivan, sponsor; W. H. Boyce, sponsor; H. O. Allison, co-chairman, and H. B. Potter, co-chairman.

President Seely congratulated the joint commission on the work it has done. He suggested that individual companies can take the cue from the report and collect material from their own records, subdividing it according to causes of accident.

The formal discussion was opened by W. G. Fitzpatrick, general claims attorney Detroit United Railway. He said that speaking from the standpoint of the claims man the situation is gratifying. There has been a considerable reduction in accidents on the basis of passengers carried and miles operated. He said that the claims men and the transportations man should and must collaborate and that they should have a sympathetic attitude toward each other. The operator of the cars must, however, become the dominant factor in the situation.

The principal thing is discipline, discipline and still more discipline, said Mr. Fitzpatrick. He felt, however, that compensation laws have a baneful influence, even if they do not directly cause accidents. He said that trainmen should be directly responsible to their superiors and not to some board or commission.

Barron Collier, who was asked to give a written discussion, was unable to be present. His discussion was read by Marcus Dow. According to Mr. Collier, perhaps no industry can do so much for the safety movement as the electric railways, for they have the energy, brains and resources with which to do constructive work. He pointed particularly to the accident record of Greater New York, stating that there were killed in the streets by vehicles last year 965 persons, approximately half of whom were children under sixteen years of age, and more than 6,000 persons were injured.

"I have little faith that the slogans which have been chanted will bring about results," said Mr. Collier, "but I do think that when we go to the root of accidents, the causes for them, as you have done in your report for this year, we have started along the right line to cut down casualties."

Mr. Dow supplemented these remarks by stating that saving the lives of children is a work dear to the heart of Barron Collier. The thing which makes everything in the world worth while is human life. It is bad enough that nearly a thousand lives were sacrificed in the year, but that half of them were children under sixteen years of age was the appalling fact.

President Muir of the Claims Association conducted the informal discussion. Successful safety work is impossible unless there is a spirit of co-operation between the transportation man and the claims man, said Mr. Muir. One can't be successful without the other. They must accept advice from counsel and from each other.

J. H. Handlon, Market Street Railway, San Francisco, said the development of safety devices for cars and safety practices promulgated by public authorities, as well as statistical methods devised for recording and classifying accidents were acting to better the situation. He said that some of the things done decreased certain classes of accidents but increased others. Better methods of selecting platform men were advocated by him. Eccentricities of various men in selecting applicants were scored. Following this care should be taken in the selection of men and they should be watched from the day they are accepted all during the period of training. He believed that it seemed advisable to adopt a follow-up method and give the men a probationary period before they are given full charge on the cars.

Attention was called to certain matters of the report that do not deserve compliment by L. H. Palmer, United Railways & Electric Company, Baltimore. Statistics presented show that half of the companies are not co-operating with the National Safety Council. Many companies have not formed safety committees or appointed safety directors. He thinks that it is an outrage that the companies have not taken advantage of their opportunities in doing work of this sort.

H. O. Allison, co-chairman of the committee, referred to the conclusion of the report on accident prevention, which was ruled out by the committee on publication. Mr. Allison presented this as his own contribution to the discussion. He said that there is no such thing as an unavoidable accident. Poor equipment, bad roadbeds, etc., may culminate in accidents, and therefore should be taken care of in advance. In this way many accidents are prevented which might have occurred otherwise.

James P. Barnes, president Louisville Railway, expressed his dissent from the view of Mr. Fitzpatrick and stated that he thought it equally necessary for a railway to have a brass band as well as to get down to brass tacks. The fact that the employment of men on the Beaver Valley Traction lines is in the hands of the safety engineer was brought out by W. H. Boyce, general manager.

The report of the committee on co-operation with the National Safety Council was presented by L. H. Palmer, general manager United Railways & Electric Company, Baltimore

Co-operation with the National Safety Council

The committee on co-operation with the National Safety Council early in the association year, after correspondence with the headquarters office of the Safety Council, picked out fifty-eight of the most important railway companies that were not members of the council and wrote to them, explaining the benefits of membership and urging them to join. All of the companies were written at least twice, by one or the other of the committee, and in each instance reply was requested. Of this number thirty made no reply, fifteen declined to join, ten joined or had benefits of the council through allied companies and three have the matter under consideration.

The committee was much disappointed in the response to its letters and it appears that the only way in which effective results can be obtained in future is through personal contact of members of the council with those who are not.

The report was signed by W. H. Boyce, Wallace Muir, L. H. Palmer, chairman.

In discussing this paper Mr. Barnes told of the benefits lost to railway companies by their failure to join the National Safety Council.

A paper on "Maintenance of Men" was read by Dr. H. E. Fischer, chief surgeon Chicago Elevated Railways.

Following the presentation of the paper, Dr. Bascom, Illinois Traction System, stated that railways should encourage their employees to consult the company doctor for even minor ailments. He emphasized also the danger of employing men suffering from syphilis.

At the conclusion of the discussion, President Seely of the Transportation & Traffic Association thanked President Muir of the Claims Association for the co-operation of the latter body in joint meeting. Mr. Muir expressed his gratification at the successful character of the meeting. There was no report from the committee on resolutions and the meeting therefore proceeded with the installation of new officers.

The new president, J. K. Punderford, was escorted to the chair by Mr. Smith and accompanied by the other new officers and members of the executive committee. In a graceful speech, the retiring president expressed his wish for Mr. Punderford's success in the ensuing year. Mr. Punderford described briefly the extensive wire pulling that he had done in order to gain his new eminence and promised to perform the duties of the office to the best of his ability.

He presented the badge of past-president to Mr. Seely and stated that no better testimonial of the success of his service as president of the T & T Association could be asked for than the well attended and highly interesting meetings during the convention. In accepting the badge, Mr. Seely expressed his deep gratification. There being no further business the meeting adjourned.

Biographical Sketches of Newly Elected Officers

Britton I. Budd

A KEENER, abler leader than Britton I. Budd could not have been selected for the American Electric Railway Association. This statement was made in the CONVENTION DAILY issue of the ELECTRIC RAILWAY JOURNAL in announcing Mr. Budd's election. Nothing that could be said about Mr. Budd would state the case better. It does not alter the fact that Mr. Budd would be the last one to subscribe to this view of him. The statement was made not only because of the kind of thinking Mr. Budd has contributed in the counsels of the association, but also because of the splendid record of achievement he has made with the Chicago, North Shore & Milwaukee Railroad and the Chicago Elevated Railroads. In selling transportation and developing good will, Mr. Budd probably stands out as the leading figure in the industry. Furthermore, so many ideas of modern electric railroading are being worked out on his properties that one may learn at every turn some new and progressive method of doing the thing better or at lower cost.

MR. BUDD'S ALL-AROUND EXPERIENCE

A plain statement without frill of the accomplishments made under Mr. Budd's direction confirms the view that there are still many things that can be done to improve the electric railway outlook.

Mr. Budd makes a good president in another respect. He is both interurban and street railway man, and rapid transit, too. There is probably not another man in the industry who is all three. Moreover, he is also president of the Public Service Company of Northern Illinois, one of the Insull electric and gas companies.

Mr. Budd has been associated with the transportation business ever since he left school, at which time he took a situation in the surveying department of a steam railroad in Ohio. In 1893, during the World's Fair at Chicago, he was associated with the Intramural Railway. With the incorporation of the Metropolitan Elevated he saw Chicago's future transportation plans take real form, and when actual operation of that line was commenced in May, 1895, he obtained a position as clerk in the storehouse. With the Metropolitan his rise was rapid, for he soon became storekeeper, then purchasing agent and finally general manager. When Mr. Hetzler, president of the Metropolitan, left in 1910, Mr. Budd was elected president of the company.

In 1911 a consolidation of all the elevated lines in Chicago was brought about, and Mr. Budd was chosen president of the combined system. Besides being president of the Chicago Elevated Lines, he became president of the Chicago, North Shore & Milwaukee Railroad at the time of that line's reorganization in 1916, and more recently assumed the same position with the Chicago and Interurban Traction Company. He was

elected president of the Public Service Company of Northern Illinois early this year.

Further evidence of the accomplishments of Mr. Budd is afforded by the award of the Coffin medal to the Chicago, North Shore & Milwaukee Railroad, headed by him. The work of that road is reviewed in the report of the Coffin committee, presented elsewhere in this issue.

All in all Mr. Budd's election bids fair to insure another year of great accomplishment for the association.

Harley A. Johnson

H A. JOHNSON, who was elected president of the Engineering Association, is an alumnus of Purdue University, class of 1905. By progressive steps, taken during the past eighteen years, he has risen to the position of assistant to the general manager Chicago Elevated Railroads. In his present position he assists the general manager in carrying out the details of operation and maintenance of the property.

While in college Mr. Johnson was president of the mechanical engineering society. He was active in all student matters, being elected to Tau Beta Pi after one year in college. He graduated with the highest mark in the mechanical engineering class and was the representative of the mechanical engineers on the commencement-day program.

During his days at Purdue, and immediately following, he was a special apprentice in the mechanical department of the C., B. & Q. Railroad intending to enter the steam railroad field as a life work. In this position he worked in the drafting room, as a locomotive fireman, in the testing laboratory, in the locomotive erecting shop and on locomotive road tests.

In 1905 he entered the service of the Metropolitan Elevated in Chicago as helper in the shops, and worked his way up through different departments, including those of maintenance of way and transportation. In 1907 he was made engineer of car equipment, and three years later master mechanic, having the duties of superintendent of equipment.

When in 1911 the elevated railways consolidated, Mr. Johnson was made master mechanic of all of them, his title being shortly changed to superintendent of shops and equipment. In this position he handled the design and followed the construction of the new steel cars purchased in 1914 and 1915. This was his most responsible job up to that time. In 1916 his duties were extended to include similar ones for the Chicago, North Shore & Milwaukee Railroad.

In 1918 Mr. Johnson was made organization engineer for the four elevated railroads, being promoted three years later to his present position. He has charge of the educational work on the elevated lines and is chairman of the expense and budget committee. This committee approves all items of budgets and special authorizations for work, both construction and operation. He helped to organize the local company section of the American Association and was president for the first two years. He was on the original committee that inaugurated safety work on the "L" system. He was detailed by Mr. Budd to investigate the subject of motor buses for the North Shore Railroad.

Mr. Johnson has been long active in committee work of the Engineering Association. He also interests himself in Chicago technical and other organizations. He is a member of the Western Railroad Club, the Western Society of Engineers, the American Institute of Electrical Engineers and the Illinois Electric Railways Association.

J. K. Punderford

THE newly elected president of the Transportation & Traffic Association, J. K. Punderford of New Haven, Conn., is general manager of the Connecticut Company, which operates 802 miles of track and owns nearly 1,500 motor cars and a number of buses. It operates a large majority of the electric railways in Connecticut and serves all of the large cities in the state. Mr. Punderford has been connected with this property or its predecessor in New Haven for thirty-one years.

The new president of the Transportation & Traffic Association is a native of New Haven and naturally went to Yale University. He took the combined electrical and mechanical engineering course then given and was graduated in 1892. His first job was an electric railway one, assisting in the erection of the power station of the West Haven Street Railway. In the autumn of 1892 he went to Schenectady to take the students' course in electrical engineering then being given in the Edison works, but returned to New Haven and became connected with the Fair Haven & Westville Street Railway, then the largest electric railway property in the city.

At first he was engaged in the track department, but later entered the operating department, and when the company acquired the other electric railways in New Haven and vicinity he was made general manager of the combined system. Later, when the New York, New Haven & Hartford Railroad purchased the property and the other electric railways in the state Mr. Punderford was retained as general manager of all of the combined properties which now comprise the Connecticut Company.

Although most of Mr. Punderford's active business career has been in the transportation side, he has never lost his interest in engineering, especially in trackwork, and has given quite a little of his time to this department.

Mr. Punderford has always taken an interest in association affairs and served last year as first vice-president of the Transportation & Traffic Association. He is also an ex-president of the Union League Club of New Haven and an ex-president of the Connecticut Society of Civil Engineers.

Information Bureaus Meet

AT THE invitation of W. H. Sawyer, president East St. Louis & Suburban Railway, representatives and officers of state and sectional associations and directors of the public utility information bureaus, gathered for a luncheon at the Marlborough-Blenheim Hotel on Tuesday. There has been such a rapid expansion in the number and work of these information bureaus it was believed much good could be accomplished by such an assemblage. Several officers and past officers of the association and representatives of some of the sectional organizations were present.

Those in attendance were as follows:

Representatives of public service information bureaus—J. S. S. Richardson, Philadelphia; H. M. Lytle, Chicago; Joseph B. Groce, Boston; Benjamin E. Ling, Cleveland; A. B. McCrum, Charleston, W. Va.; Frantz Herwig, Milwaukee; John N. Cadby, Madison, Wis.; J. W. Holcomb, Cleveland; and Frank Bellville, Louisville, Ky.

Sectional association representatives—W. V. Hill, manager California Electric Railway Association; L. E. Earlywine, secretary Central Electric Railway Association, and E. N. Willis, secretary Southwestern Public Service Association.

Among the officers of the association and delegates from member companies were: President C. D. Emmons; Vice-Presidents B. I. Budd and J. N. Shannahan; Past-Presidents P. H. Gadsden, J. J. Stanley and L. S. Storrs; Secretary J. J. Welsh; Treasurer Barron Collier; and E. C. Faber, J. H. Alexander, J. P. Barnes, C. D. Cass, W. P. Strandborg, Labert St. Clair and J. W. Colton.

The most extended address was by Mr. Lytle of Chicago, a pioneer in the movement. Others who spoke were Messrs. Budd, Collier, McCrum, Richardson, Groce, St. Clair, Strandborg, Willis, Hill, Ling and Cadby.

New Officers of the Accountants' Association

At the meeting of the American Electric Railway Accountants' Association on Oct. 11 the following were elected officers of the association:

President, E. M. White, treasurer Binghamton Railway, Binghamton, N. Y.

First vice-president, W. L. Davis, auditor Lehigh Valley Transit Company, Allentown, Pa.

Second vice-president, J. J. Duck, general auditor Chicago Surface Lines, Chicago, Ill.

Third vice-president, Walter Shroyer, secretary Union Traction Company of Indiana, Anderson, Ind.

Executive committee: L. E. Lippett, auditor Auburn & Syracuse Railway, Auburn, N. Y.; T. B. MacRae, general auditor Metropolitan West Side Elevated Railway, Chicago, Ill.; O. H. Bernd, secretary and auditor Des Moines City Railway, Des Moines, Iowa; E. H. Reed, auditor Brooklyn City Railroad, Brooklyn, N. Y.

Engineering Association Proceedings

The Advance of National Standardization Was One of the Outstanding Features—Methods of Handling Materials and Supplies, and of Accounting, Are Given Consideration —Arrangements Are Completed for Revision of the Engineering Manual

THE first session of the Engineering Association was held Monday afternoon, Oct. 8, with President L. C. Datz presiding. President Datz's address, which outlines the achievements of the association, follows:

President's Address

In his presidential address to the Engineering Association, L. C. Datz reviewed the accomplishments of the various sub-committees and the work of the association during the year and made several suggestions as to its future course. He spoke of the work of the committee on methods of voting on standards, as well as that of the committee on revision of the Engineering Manual. He stressed the amount of work that has been done on this revision and mentioned the fact that the executive committee of the American Association had approved the request to print the new manual.

Mr. Datz described the report of the committee on heavy electric traction and spoke of a question as to the proper scope of its activities. Mention was made also of the report of the special committee on wheel and rail contours, the equipment committee and that on buildings and structures. Praise was given to the committee on wood preservation for its work during the year and also to that on air reservoir specifications. The report of the committee on purchases and stores was praised by Mr. Datz, as was that of the committee on way matters.

Electrical problems were covered in the reports of the special committee on automatic substations, that on power distribution and on power generation. Increasing activity of the Engineering Assocation was mentioned in connection with the drafting of a policy to establish a definite and simple procedure in matters relating to the American engineering standards committee. Continuing, Mr. Datz said:

A great deal of serious thought has been given in the past few years to various phases of the Engineering Association, its activities and methods and the effect its results have in the electric railway industry.

One of the most important questions is that pertaining to standards. Is the present method of appointing the standards committee and the way it functions conductive to obtaining effective results? To this I would say "Yes" conditionally, because a committee of fifteen men, nine of whom represent railway companies and six represent manufacturers, can be selected that will guard this phase of the work efficiently, if the committee be carefully chosen with regard to necessary experience to pass upon such matters intelligently.

L. C. Datz
Retiring President

In connection with our standards and the use of same by our companies, the revision of our Manual and the adoption of some of our standards as American standards by the A. E. S. C. will aid materially in accomplishing results. I am pleased to state that there seems to be a noted improvement in the use of association standard for 7-in. grooved girder rail. I know personally it has been laid in New Orleans, Memphis, Knoxville and Little Rock in goodly quantities in the last two years. However, there is room for a great deal of improvement, and with the constant endeavor of our association to make our standards represent the last word in the art, we should do everything necessary to bring the use of same about, in order to offset the criticism for non-use of association standards we have been hearing so much.

Then there has been a great deal said about too many associations working independently on allied subjects. We should have ever before us the elimination of wasted effort and expense incurred in duplication of work by various technical associations on subjects in which they are interested individually. A great deal of this duplication can be eliminated by joint effort of interested associations, and I am pleased to say that it is becoming the practice more and more for the various associations to co-operate along these lines. The American Engineering Standards Committee serves as a happy and efficient medium in a great many cases.

H. A. Johnson
President-Elect

Individual Membership

I would like to see this association take the proper steps to further the inclusion of a course of public utility engineering in curriculums of colleges of recognized standing.

I want to call the incoming administration's attention to an opportunity to strengthen the Engineering Association by increasing the number of individual members. I am thoroughly sold on this idea, and I have been an individual member of the Engineering Association since my days in the drafting room some years ago. I speak from experience when I say that there are advantages incidental thereto that no man in justice to himself and the company he serves can afford to forego. These benefits follow active participation in the work of the association, in proportion to the well-directed thought and time put into it. Personal contact with other men interested in the same problems broadens a man's viewpoint, which cannot help but reflect favorably in the kind of effort he puts forth in his company's interest.

Although the Engineering Association has by far the largest number of indiviual members of any of the affiliated associations, there are still quite a number of men who should be individual members of this association, and we can render them a real service by bringing to their attention the benefits to be had by joining this association and taking an active part in its work. The dues are $5 per year, extremely nominal, and are kept purposely so in order to make it possible for every man connected with the engineering end of the electrical railway industry, whether he be the chief engineer, mechanical, electrical or civil engineer, signal engineer, superintendent of equipment, of power, of railway or of overhead construction, master mechanic, inspector, foreman, draftsman, as well as purchasing agent, storekeeper, or assistant to any of these officers.

I would strongly recommend that a

special committee to increase individual membership in the Engineering Association, to work in harmony with the American committee on membership, be appointed.

In conclusion, Mr. Datz mentioned the pleasure he had had in serving as the head of the Engineering Association and thanked the members for the assistance they had given him.

G. C. Hecker read the secretary's report prepared by J. W. Welsh, setting forth the various accomplishments of the association during the past year.

Secretary-Treasurer's Report

There were ten standing and six special committees during the year, the total personnel being 169, exclusive of the executive committee. Thirty-nine committee meetings were held, with a total attendance of 294 members.

Co-operative work on the part of the committees with other associations has resulted in the completion of several important specifications, including those for track construction, prepared in co-operation with the American Society for Municipal Improvements, and the specifications for the manufacture of open-hearth steel girder rails of plain, grooved and guard types.

The committee on power distribution has co-operated with the American Society for Testing Materials in harmonizing the specifications for round and grooved high-conductivity trolley wire. The committee on way matters is co-operating with the American Railway Engineering Association in studying the design of substitute ties and in formulating specifications for crossings of steam railroads and electric railway tracks.

The recommendations of the 1922 committee on way matters regarding a research program in connection with the work of the committee on welded rail joints resulted in an appropriation of $10,000 by the American Association and contributions amounting to $13,477 by a number of member companies. This will be used for the construction and operation of the necessary service testing machines and for other expense involved in developing the several types of welded rail joints now on the market.

There is now under way the formation of an American Committee on Inductive Co-ordination, which will be representative of all interests involved and which the association is developing in connection with the National Electric Light Association and the Bell Telephone System.

Relations with the American Engineering Standards Committee are becoming increasingly important each year. Six of the Manual sections have been approved as "American standard" and one as "tentative American standard." Other proposals of the association will be take up through sectional committees.

The committee on revision of the Engineering Manual has been active and it has been definitely decided to publish the Manual hereafter in the form of a bound volume to be reissued at intervals of from three to five years.

As to membership, the total number of individual members, Aug. 31, 1922, was 528. Since then twenty-five applicants have been admitted; twenty-seven members have resigned, and forty-seven delinquents have been dropped, making the net membership Sept. 15, 1923, 479.

The annual report of the executive committee was approved by title only, inasmuch as the report will be printed in full in the proceedings of the association.

Committee Appointments

H. H. Norris, C. R. Harte and R. C. Cram were appointed as the convention committee on resolutions.

In the absence of C. S. Kimball, chairman of the committee on methods of voting on standards, G. C. Hecker read the committee's report. This was simply a progress report which recommended that the subject be continued. The report was approved.

Engineering Manual

R. C. Cram presented a report of the committee on revision of the Engineering Manual, explaining why it was necessary to have a committee investigating this subject. The difficulties encountered in endeavoring to keep the old loose-leaf Manual together and the expense of keeping it up to date were factors which finally led to the adoption of a bound volume. An appropriation of $5.500 recommended by the committee for the purpose of revising the Manual has been approved by the executive committee of the American Association. H. H. Adams, in his motion to approve the committee's report, stated that he believed it was time to revise the Manual because of the unwieldy form of the old volume. The recommendation that the committee be continued was approved.

Heavy Electric Traction

The bibliography of heavy electric traction and electrification data has been checked and revised by Prof. R. B. Warner of Yale University. It has been suggested that a complete rearrangement of the list be made, classifying together all articles appearing in a given periodical during any one calendar year, and from this compiling the subject index. The work would thus comprise: (1) A group of articles in any one periodical; (2) a chronological grouping, and (3) a subject index. Subsequent additions may readily be made as desired without material addition to the cost of printing.

The committee recommends that a complete bibliography, rearranged as outlined, be compiled and printed next year and automatically revised from year to year.

With regard to branch line electrification the committee states that with few exceptions branch line electrifications were made several years ago and there has been no material development during recent years. The committee, therefore, has not made a comprehensive investigation of the situation, feeling that such information would not be of material value, particularly in view of the recent tendency to substitute self-propelled cars for steam service on branch lines.

The self-propelled car is undoubtedly of interest to those responsible for electric railroads as well as to the operators of steam road branch lines.

The committee on equipment of the A. E. R. E. A. in 1912 compiled an extremely comprehensive report covering the development of self-propelled cars. The cars developed at that time were of various types, such as gasoline, steam, compressed air, storage battery, etc. Subsequent to 1912 an interruption seems to have occurred in the development of self-propelled cars for branch line operation.

Recently, renewed interest in the self-propelled car has been manifested. A number of roads in this country and abroad have adopted, and are operating successfully, a type of gasoline-driven car considerably smaller than those which were most common in 1912.

During the past few years the development of heavy electric traction has been of necessity somewhat slow on account of lack of funds available for expansion. Many railroads, however, have actively considered the question of electrification as a solution for their individual problems, and several engineering investigations have been completed and plans made for electrification. These are described in some detail in the report.

The report was signed by A. H. Armstrong, R. Beeuwkes, J. M. Bosenbury, H. W. Cope, J. H. Davis, J. V. B. Duer, E. C. Johnson, Norman Litchfield, A. S. Richey, C. H. Quereau, L. S. Wells, H. A. Johnson, John C. Davidson, vice-chairman, and Sidney Withington, chairman.

Sidney Withington, New Haven Railroad, added to the report the following data regarding Baltimore & Ohio Railroad locomotives: The company has bought two new electric locomotives, weighing 120 tons each, for use in passenger and freight service. The gear ratio is 19:83, and at 14½ m.p.h. the tractive effort is 19,400 lb. The maximum tractive effort is 72,000 lb., and the maximum safe speed is 35 m.p.h. The railroad is also rebuilding four old locomotives to bring their weight to 120 tons each. Cast-iron ballast is being installed in the cabs. The gear ratio is also being changed.

Mr. Withington emphasized the importance of the bibliography, pointing out that the new plan outlined in the report calls for continuity. The old bibliography contained many errors which have been corrected. On the subject of the self-propelled car he said that this is making rapid progress, and many railroads are feeling their way in solving traffic problems by using this type of car, sometimes temporarily. No standardization is possible at this time. The data given in the committee's table are not complete, but a complete list of railroads to which questionnaires were sent will be appended.

H. A. Johnson, Chicago Elevated Railways, said that the question had been raised as to whether the committee on heavy electric traction has been functioning in accord with the wishes of the association. The original purpose of the committee was to keep the members informed regarding the progress of electric traction on steam railroads. It has been working principally along this line. A special committee was appointed by the executive committee to study this matter, and on behalf of this committee he recommended that the scope of the work be broadened to include heavy traction on urban and interurban railways.

C. R. Harte, the Connecticut Company, said that the association is vitally interested in the self-propelled car of the type that the steam railroads are using. Electric railways must concern themselves in the development of auxiliary vehicles. Of these the bus is difficult to maintain, whereas the self-propelled car is rugged.

The report of the committee was then accepted.

Wheel and Rail Contours

H. H. Adams, Chicago Surface Lines, abstracted the report of the special committee on wheel and rail contours. He stated that the last revision of wheel contours was made in 1907. At five conventions since then revisions have been proposed but not acted upon. In 1922, however, the association deemed the matter important enough to appoint this special committee. The result has been that a set of contours has been agreed upon. These are the same for chilled and steel wheels below the tread line. An abstract of the report follows:

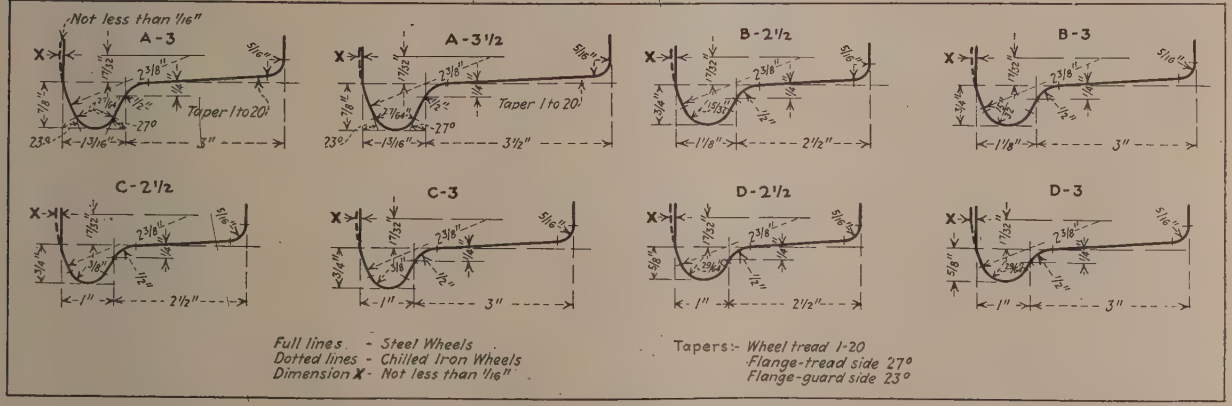
Abstract of Report

The committee submitted four contours of wheel flanges, each in combination with two widths of wheel treads and recommended that these be adopted as standard for both steel and chilled-iron wheels. An additional contour which is the same as that which is standard for the American Railway Association was also submitted for use where larger wheel flange and wheel tread are required.

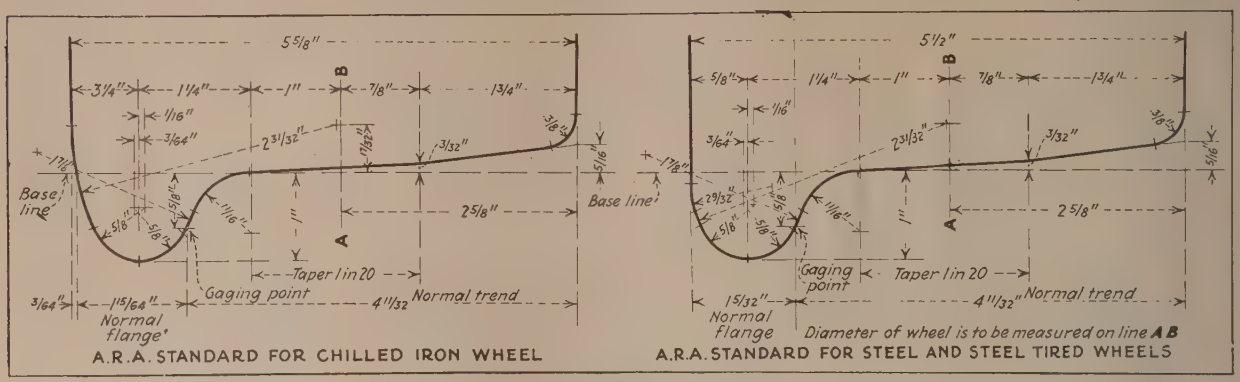
The flange contours are alike for both steel wheels and chilled cast-iron wheels

STANDARD DIMENSIONS FOR A.E.R.E.A. PROPOSED STEEL WHEEL DESIGNS

Number of Wheels	Diameter D Inches	Flange Height a Inches	Flange Thickness b Inches	Throat Radius c Inches	Rim Width e Inches	Rim Thickness d Inches	Hub Diameter t Inches	Hub Length n Inches	Hub Projection Track Gage 4 ft. 8½ in.	Hub Projection Track Gage 5 ft. 2½ in.
Table No 1.—Flange Thickness 1 In., Tread and Flange Contour D 2½										
1	21	⅝	1	½	3½	2	7	4½ or 5	3½	4½
2	22	⅝	1	½	3½	2	7½	4½ or 5	3½	4½
3	24	⅝	1	½	3½	2	7½	4½ or 5	3½	4½
4	26	⅝	1	½	3½	2	8½	4½ or 5	3½	4½
5	28	⅝	1	½	3½	2	8½	4½ or 5	3½	4½
6	31	⅝	1	½	3½	2	8½	4½ or 5	3½	4½
7	33	⅝	1	½	3½	2½	8½	4½ or 5	3½	4½
8	34	⅝	1	½	3½	2½	8¼	4½ or 5	3½	4½
Note: Minimum rough bore 3¾ in.										
Table No. 2.—Flange Thickness 1 In., Tread and Flange Contour C 2½										
1	21	⅝	1	½	3½	2	7	4½ or 5	3½	4½
2	22	⅝	1	½	3½	2	7½	4½ or 5	3½	4½
3	24	⅝	1	½	3½	2	7½	4½ or 5	3½	4½
4	26	⅝	1	½	3½	2	8½	4½ or 5	3½	4½
5	28	⅝	1	½	3½	2	8½	4½ or 5	3½	4½
6	31	⅝	1	½	3½	2	8½	4½ or 5	3½	4½
7	33	⅝	1	½	3½	2½	8½	4½ or 5	3½	4½
8	34	⅝	1	½	3½	2½	8¼	4½ or 5	3½	4½
Note: Minimum rough bore 3¾ in.										
Table No. 3.—Flange Thickness 1 In., Tread and Flange Contour D 3										
1	24	⅝	1	½	4	2	7½	4½ or 5	3½	4½
2	26	⅝	1	½	4	2	8½	4½ or 5	3½	4½
3	28	⅝	1	½	4	2	8½	4½ or 5	3½	4½
4	31	⅝	1	½	4	2	8½	4½ or 5	3½	4½
5	33	⅝	1	½	4	2½	8½	4½ or 5	3½	4½
6	34	⅝	1	½	4	2½	8¼	4½ or 5	3½	4½
Note: Minimum rough bore 3¾ in.										
Table No. 4.—Flange Thickness 1 In., Tread and Flange Contour C 3										
1	24	⅝	1	½	4	2	7½	4½ or 5	3½	4½
2	26	⅝	1	½	4	2	8½	4½ or 5	3½	4½
3	28	⅝	1	½	4	2	8½	4½ or 5	3½	4½
4	31	⅝	1	½	4	2	8½	4½ or 5	3½	4½
5	33	⅝	1	½	4	2½	8½	4½ or 5	3½	4½
6	34	⅝	1	½	4	2½	8¼	4½ or 5	3½	4½
Note: Minimum rough bore 3¾ in.										
Table No. 5.—Flange Thickness 1⅛ In., Tread and Flange Contour B 2½										
1	26	⅝	1⅛	½	3⅝	2	8½	5	2 1/16 or 1 11/16	
2	28	⅝	1⅛	½	3⅝	2½	8½	5		
3	31	⅝	1⅛	½	3⅝	2½	8½	6		
4	33	⅝	1⅛	½	3⅝	2½	9¼	6		
5	34	⅝	1⅛	½	3⅝	2½	9¼	6		
6	36	⅝	1⅛	½	3⅝	2½	9¼	6		
Note: Minimum rough bore 3¾ in.										
Table No 6.—Flange Thickness 1⅛ In., Tread and Flange Contour B 3										
1	26	⅝	1⅛	½	4⅛	2	8½	5	2 1/16 or 1 11/16	
2	28	⅝	1⅛	½	4⅛	2½	8½	5		
3	31	⅝	1⅛	½	4⅛	2½	8½	6		
4	33	⅝	1⅛	½	4⅛	2½	9¼	6		
5	34	⅝	1⅛	½	4⅛	2½	9¼	6		
6	36	⅝	1⅛	½	4⅛	2½	9¼	6		
Note: Minimum bore 3¾ in.										
Table No. 7.—Flange Thickness 1 5/16 In., Tread and Flange Contour A 3										
1	33	7/16	1 5/16	½	4 5/16	2½	9¼	6	2 1/16 or 1 11/16	
2	34	7/16	1 5/16	½	4 5/16	2½	9¼	6		
3	36	7/16	1 5/16	½	4 5/16	2½	9¼	6		
Note: Minimum rough bore 3¾ in.										
Table No. 8.—Flange Thickness 1 5/16 In., Tread and Flange Contour A 3½										
1	34	7/16	1 5/16	½	4 11/16	2½	9¼	6	2 1/16 or 1 11/16	
2	36	7/16	1 5/16	½	4 11/16	2½	9¼	6		
Note: Minimum rough bore 3¾ in.										



Tread and Flange Contours Proposed for Steel and Chilled-Iron Wheels


A.R.A. STANDARD FOR CHILLED IRON WHEEL
A.R.A. STANDARD FOR STEEL AND STEEL TIRED WHEELS
Base line
Gaging point
Taper 1 in 20
Normal trend
Normal flange
Diameter of wheel is to be measured on line AB

A.R.A. Standard Wheel Contours

below the level of the tread. On steel wheels the back of the wheels follows a straight vertical line above the tread level. On chilled-iron wheels the curve of the flange contour is continued above the tread level to produce a gradual thickening of the metal.

The recommendations of the committee were that the wheel contours submitted be adopted as standard and that wheel contours shown in the Engineering Manual under Et. 4a be superseded and withdrawn. Also that the table of dimensions for steel wheels submitted by the committee be adopted as standard to supersede the present standard dimensions as shown in the Engineering Manual Section Et. 7b, this table being a revision of the dimensions to suit the new proposed wheel contours.

In addition to the Manual sections referred to, the proposed standards effect section Et. 18a, wheel mounting and check gages adopted in 1919; Em 3a, limit of wear for association flange contours adopted in 1916; Ws 2a, rules for determining gage of track on curves adopted in 1911. The committee recommended that these sections be referred to committees of the association for revision next year.

The report was signed by C. A. Alden, V. Angerer, George L. Fowler, J. M. Larned, J. H. Lucas, A. D. McWhorter, A. J. Miller, J. F. Miller, J. M. Yount, J. H. Hanna, vice-chairman, and H. H. Adams, chairman. H. Fort Flowers, a member of the committee, did not concur in the report.

The committee's recommendations were then approved, but the report was referred to the next equipment committee for revision of the tables which accompany the contours, with instructions that they be expanded to permit any standard contour to be obtained with any standard wheel diameter.

Discussion centered on the necessity for the providing extra metal in chilled wheels above the tread line. Experts in wheel manufacture explained that the extra metal is needed in chilled wheels to strengthen the flange This is not required in the steel wheels and, moreover, they cannot be rolled to provide it. The American Railway Association endeavored to have this extra metal rolled but the attempt had to be abandoned.

Objection to the extra metal was raised on account of the possible wear on girder guard rails, but it was pointed out that in practice no wear is caused by the wheels above the tread line. In fact, the contour of the guard rail provides clearance for this extra metal. The curvature on T-rails serves the same purpose.

The special committee was then discharged with thanks for its excellent work.

W. W. Wysor, United Railways & Electric Company, raised a question as to the desirability of using narrow treads, and Mr. Adams explained that the committee recommends the use of wide treads wherever possible.

H. Fort Flowers, Differential Car Company, explained his reasons for putting in a minority report on this subject. He said that undoubtedly the committee had recommended wheel contours that were in accord with the wishes of the way committee of two years ago. Since then, however, new rail contours have been adopted in several cities, emphasizing the advantages of a compound fillet. New wheels and rails should fit.

It has been claimed that a wheel contour will conform to a rail contour after 600 miles of wear and that, therefore, the compound fillet is unnecessary. This conclusion leaves out of account the fact that in this rolling process metal is taken from the flange, and the life of the wheel may be decreased by as much as 3,000 miles. Mr. Flowers favored the continuation of the special committee so that this matter could have further consideration.

R. C. Cram, Brooklyn-Manhattan Transit Corporation, on behalf of the committee on revision of the Manual, asked that the equipment committee be instructed to revise the contour tables promptly, and it was understood that this will be done before the Manual is reissued.

Mr. Cram brought up the question of the advisability of adopting a new standard grooved girder guard rail for curves. He stated that now about 75 per cent of the rail production is of association standard rails. The matter was also discussed by C. H. Clark, H. Fort Flowers and C. A. Alden.

Tuesday's Sessions A.E.R.E.A.

The second session of the Engineering Association convened promptly at the appointed time Tuesday afternoon with president L. C. Datz in the chair. The report of the equipment committee for subjects Nos. 1, 2, 4 and 5 was presented by the chairman, F. H. Miller. The report on subject No. 3, which included a review of existing standards with recommended changes, was presented by C. W. Squier.

Equipment

This year's equipment committee reported on five subjects. The first of these was a study of gearing. Information in regard to helical gears was obtained from twenty-six replies to a questionnaire. This is the third year that information has been obtained in this manner, and since three years is just about the average life of a modern heat-treated pinion, information in regard to actual life could be arrived at only by estimation.

There is a marked difference of opinion, as reported, on the relative flange wear when spur or helical gearing is used; companies representing 47.5 per cent of the sets reported say that the flange wear is not greater with helical gearing than with spur gearing; 21.9 per cent say the wear is about the same, and 12.3 per cent say the difference is not noticeable.

With respect to the helical gearing running quieter than spur, companies representing 81.9 per cent of the sets reported say "yes" when new; 64.2 per cent of the sets reported say "yes" when half worn out, and 37.4 per cent of the sets reported have insufficient data to answer as to this when the gears are completely worn out.

Regarding the long and short addendum tooth, as applied to both the helical and the spur type of gearing, the leading manufacturers are agreed that it is an improved design. It is, of course, highly desirable that a standard form of tooth be adopted by all gear manufacturers. It was brought out that for long and short addendum gearing a

limit-of-wear gage for gears and pinions would be desirable and would be a great aid to shopmen in determining just when to remove a gear or pinion without sacrifice of mileage or danger of the gearing failing while in service.

A careful study of web holes in gear blanks was made and the report included a table of the size and location of web holes in railway motor gear blanks as at present furnished by manufacturers. This should enable users to familiarize themselves with the present size and location of web holes, and the equipment committee recommended that this subject be studied by next year's committee with an idea of reducing the number of these.

The second subject reported on was various devices for trolley contact and their effect upon trolley wire. Information in regard to this subject was also obtained by means of a questionnaire, from which the following conclusions have been reached:

1. That trolley wheels of manufacturers' standard compositions give mileage equal to those using special composition.

2. That solid wheels are preferable to built-up type.

3. That standard "U" or "V" groove is most satisfactory under normal operating conditions.

4. That wheels lubricated with grease in hollow pin give greater mileage than wheels lubricated otherwise.

The number of companies using or testing the sliding contact indicates a growing demand for a better device than the trolley wheel, particularly for high-speed service.

Subject No. 3 was a review of existing standards and recommendations for changes. Specification Eb 4b, recommended specification for air brake hose, was changed in a few minor details to bring this into conformity with a similar specification of the American Railway Association. Specification Ec 1c, standard dimensions for height of bumpers and platforms, was withdrawn and the specification recommended by the 1922 committee of equipment was substituted. Through a misunderstanding in the last printing, both the old and the recommendations of the 1922 committee were included.

Et 3c, design of axles for electric railway motors, was corrected in line with previous recommendations. An enlarged diameter for the standard E-2 axle, which was previously omitted, was added. E-12 axle was renumbered as E-1a, so that the order of drawings would be in the same sequence as that contained in the table of dimensions. The diameter for the gear hub and motor bearing flange of E-7 axle was changed from 8 in. to 9 in. and that for the E-9 axle from 9½ in. to 10 in., in order to bring these into conformity with the stepping used for other axles. A paragraph stating tolerances, which was recommended by the 1922 committee, was added to each drawing.

Standard specification Et 9b for quenched and tempered carbon steel axles, shafts and similar forgings, and Et 11b, specification for annealed carbon steel axles, shafts and similar forgings, were changed in a few instances in order to bring these into conformity with similar specifications of the American Society for Testing Materials. Specifications for gears and pinions numbered Et 14b, Et 15b, Et 16b and Et 17b had the diameter and spacing for web holes withdrawn until definite recommendations regarding these could be recommended.

A careful review of the existing miscellaneous methods and practices referring to equipment was made, and the committee recommended that these be eliminated from the manual proper and that this subject be referred to succeeding committees for revision and republication in a separate pamphlet.

Spring Supports for Railway Motors Studied

Subject No. 4 included a study of spring supports for railway motors. Improved forms of spring supports were suggested and information given in regard to pressure and suspension which should be of particular use in design of future suspensions.

It was determined that it was desirable to have different types of spring supports for different sizes and weights of motors, but that it might be possible to eliminate some of the supporting methods now used, the motors were grouped into three classes, as follows:

(a) Motors up to 35 hp. for use on single-truck and lightweight double-truck cars, suspended by means of single spring suspension on the motor nose.

(b) Motors above 35 hp. and up to 75 hp. for double-truck service, equipped with suspension bar and double spring supports.

(c) Motors 75 hp. and over, for interurban and rapid transit service, having a rigid nose suspension.

Three types of improved motor suspension are submitted as examples of what might be done to improve conditions. The important matter of allowing for lateral material has been provided for, without distorting the springs. These suggested designs or modifications of them will no doubt cost slightly more than the present types of motor suspension, but should pay for themselves in reduced maintenance cost in a short while.

The committee thought that more accurate data as to the amount of permissible motion desirable and the downward and upward pressures obtained in service with different sized motors, due both to ordinary service and shocks, was desirable, and it recommended that this subject be continued by next year's committee.

Subject No. 5 included a study of standard dust guard designs as used by the American Railway Association. Designs were submitted for dust guards for five different sizes of journals, which the committee recommended for adoption as A.E.R.E.A. standards.

The report was signed by Walter S. Adams, Lewis J. Davis, Charles Gordon, J. L. Gould, Stuart Hazelwood, J. M. Hipple, A. J. Miller, M. O'Brien, E. D. Priest, E. S. Sawtelle, C. W. Squier, W. G. Stuck, A. Taurman, Daniel Durie, sponsor, Pierre V. C. See, vice-chairman, and F. H. Miller, chairman.

Recommendations of the standards committee were presented after each subject was ready for consideration. There was considerable discussion in regard to referring certain subjects as recommended by the standards committee back to the equipment committee in view of the urgent necessity of printing these in the Manual.

J. M. Hipple, Westinghouse Electric & Manufacturing Company, said that the allowance for bore of gears as recommended by the equipment committee would be a great convenience to both gear and truck manufacturers, and he felt that these should be approved. H. A. Johnson, Metropolitan West Side Elevated Railway, Chicago, in explaining the reason for the action taken by the standards committee, said that while undoubtedly the recommendations of the equipment committee would prove a great convenience to both truck and gear manufacturers, the standards committee felt that if tolerances for the bore of gears were approved, it would prevent the operating companies from specifying the pressure at which gears should be pressed on axles, which is desirable.

The report of the equipment committee was approved with the exception of parts recommended by the standards committee as being referred back for revision.

Co-operation Through Organization

A. D. McWhorter, Memphis Street Railway, then read a paper on "Organization and Accomplishments of Association of Electric Railway Men in Mechanical Departments of Southern Properties." It is abstracted elsewhere. The discussion brought out the fact that such co-operative work as was described has a stimulating effect on the men in the mechanical departments and is highly commendable. There was no adverse criticism of the plan.

President Emmons then came into the meeting to say a good word for the manufacturers and their exhibits. He urged the engineers to make the most of the opportunity afforded by the presence of so much equipment on the pier. Referring to the bus exhibits, he warned the engineers, in a humorous way, that they may have to revise their methods. They may have garages as well as shops to look after. What they must give is the transportation that the people want. The change to the bus is no more radical than occurred when horse railways were electrified.

N. E. Drexler, chairman of the committee on buildings and structures, presented the committee's report in abstract, taking up the four sections of the report in turn. Before taking action on the recommendations H. A. Johnson presented the recommendations of the

standards committee on those of the buildings and structures committee. The recommendation of the committee that a portion of the report entitled prepayment and postpayment inclosures be published in the Manual as miscellaneous methods and practices was disapproved. However, the standards committee approved the recommendation that the drawings of culverts, trestles and bridges, together with fundamental data, be adopted as miscellaneous methods and practices and also approved the recommendation that various sections of the Manual referred to in the report of the committee on buildings and structures be revised to conform to standards of various national associations. The recommendations of the standards committee relative to those of the buildings and structures committee were approved. Favorable action was likewise taken on the original report of the committee on buildings and structures.

Buildings and Structures

The report of the committee is divided into four general subjects: (1) Review and bring up to date the study of electric railway terminals for both city and interurban service under the following classifications: Passenger, freight, combination, and prepayment and postpayment inclosures; (2) review and bring up to date the study of waiting stations (other than terminals) of moderate cost for interurban lines; (3) continue the study and report on the design of small bridges, culverts and trestles, with a view to presenting information for good current practice; (4) review of existing standards.

Electric Railway Terminals for City and Interurban Service—The committee considers this subject of such importance that it is submitting only general data in the form of a progress report. Among the general features which should be given careful consideration are convenience of handling passengers to and from cars or trains, attractiveness of architectural design, ample and convenient track arrangement, comfort of passengers and economical arrangement of space. In the interior arrangement consideration should be given to harmony, ventilation, sanitation and utility. The general trend today is to foster a spirit of public relations by furnishing comfortable, attractive terminals. It is recommended that the study of the subject be continued by the same committee next year.

Accompanying the report are plans of the Kenosha station of the Chicago, North Shore & Milwaukee Railroad, the interurban terminal building of the Dallas Railway, the interurban central station of the Kansas City Railway & Light Company and three plans of the Newark terminal of the Public Service Railway. The latter three have been described in issues of ELECTRIC RAILWAY JOURNAL.

In connection with the design of freight terminals, it was thought that a thorough study should be made to determine the proper location for the terminal with respect to the distribution of freight and accessibility for trucking. Provision should be made, either in the building or a possible extension thereto, to take care of future growth. The yard layout and general arrangement of track should be such as to permit of expeditiously handling cars to and from the freight house.

The building should be designed to be attractive in appearance and in keeping with other improvements on the property. It should also harmonize with surrounding improvements. The width of the freight building should not be too great, as this tends to increase the amount of handling and hand trucking. From the best information obtainable, it appears that a freight building with a platform on each side facilitates the handling of freight and is most generally recommended for this purpose. A long and rather narrow building is preferred. The recommendation of the committee is that the study of this subject also should be continued.

In a general way the remarks made in regard to passenger terminals and freight terminals apply also to combination terminals. This subject also is to be continued.

Considerable space is devoted to prepayment and postpayment inclosures. These are taken up under six headings: Change booth with automatic registering passimeter, fare booth with the registering passimeter released by the agent, change booth with registering coin box, ticket booth with cancellation box, automatic high registering turnstile, and the cashier system. These various types are discussed at length and many of them are illustrated. The committee recommends that the study of this subject be discontinued for at least a year, in order that existing types may have opportunity for further development.

Waiting Stations at Moderate Cost for Interurban Lines—The committee decided that these should be classified in three groups, open shelters, closed shelters and combination shelters.

The committee concludes that attractive waiting stations and resting places for patrons add greatly to the appearance of a property and that they do much to create public good will. They may be worth all they cost in money as well as worry. The recommendation is made that the study of this subject be discontinued.

Design of Small Bridges, Culverts and Trestles—The report of the committee goes deeply into this question, discussing pipe culverts, concrete box culverts, reinforced concrete culverts, concrete arch culverts, I-beam spans on concrete abutments, frame and pile trestles, etc. Many informative diagrams are included in the report. The discussion of the live load, dead load and impact is gone into thoroughly. The committee recommends that the typical drawings of culverts, trestles and bridges, together with the fundamental data covering their design contained in the report, be adopted as miscellaneous methods and practices, but the further study of the subject be discontinued.

Revision of Existing Standards and Recommendations—Most of this section of the report of the committee is devoted to a presentation of fire protection rules, instruction for the care and maintenance of automatic sprinkler systems, and the underwriters' rules relating to cars and carhouse wiring.

The report was signed by B. R. Brown, Charles W. Burke, J. D. Kent, James Link, L. L. Newman, J. M. Penick, S. J. Steiner, D. A. Scanlon, C. H. Clark, sponsor; John R. McKay, vice-chairman, and N. E. Drexler, chairman.

A very interesting report of the committee on wood preservation was presented by H. H. George, which was approved after the recommendations of the standards committee relative to the wood preservation committee report had been approved. The standards committee approved of the proposal of the wood preservation committee that the specification for brush treatment of wooden poles be adopted and also approved of the recommendation of the wood preservation committee that certain revisions be made in Manual section Wm 8b.

Wood Preservation

The special committee had no definite assignment, but the chairman divided its work into six subjects, covering specifications for various methods of treatment, the perforation process and a review of existing specifications. A voluminous report was presented, of which the following is a brief abstract:

Specifications for Open-Tank Treatment of Wood Poles—The committee's report includes photographs of the equipment used by several commercial open-tank pole-treating companies. The time available did not permit giving proper consideration to the subject of open-tank treating plants for the smaller pole-using companies. The committee, as a result of its studies, did not feel justified in recommending for adoption as a recommended specification and specification for open-tank pole treatment, but did include, for information only, specifications which are considered as standard in the industry for the open-tank treatment of Western red cedar and Eastern white cedar. They also included as information only specifications of the Western Cedar Pole Association for open-tank treatment of poles by the guaranteed penetration process. It is recommended that the ensuing committee be instructed to report on the question of open-tank pole-treating plants for small operating companies.

Specifications for Brush Treatment of Wood Poles—The committee submits for adoption as a recommended specification a specification for brush treatment of wood poles which covers the cases of treatment of poles subsequent as well as prior to installation. It also considered the advisability of per-

mitting the use of a grade of creosote oil suitable for brush application as an alternative to carbolineum or oils of a similar type, and although confirming the opinion of the previous committee that the latter was the most suitable oil for brush work, it was recognized that carbolineum was not always obtainable at a reasonable cost and that the use of the next best oil would be better than not to use any preservative whatever. The committee therefore recommended that the ensuing committee be instructed to report on the desirability of preparing a specification for a suitable grade of creosote oil for brush work.

Specifications for Pressure Treatment of Wood Poles—The committee found that while general practice followed certain uniform methods, still there was considerable lack of accord on a number of details of the various pressure treating processes for wood poles and it therefore did not feel justified in taking the initiative in this field by suggesting definite specifications for adoption as recommended specifications. Drawing from its own experience, as well as data obtained from various commercial pole-treating companies and other existing specifications, the committee prepared, and submitted for information only, five specifications for pressure treatment of both green and seasoned poles, and recommended that further study of the subject be continued by next year's committee.

Specifications for Pressure Treatment of Cross-Arms—The committee, after careful consideration of this subject, felt that since a cross-arm could properly be classed as a dimensioned timber, the treatment of this material was already satisfactorily covered by the existing specifications of the association Wm 8b, and that no special specification was necessary. It therefore recommend that further consideration of this subject be discontinued.

Perforation Process for Timber Treatment—The committee incorporates in its report data bringing up to date the information as to developments in this method of treating timber and includes several photographs of machines now being used commercially in this country for this process. The committee felt that this method of treatment of timber had not become sufficiently standardized to justify making definite recommendations, except that further study of the subject be continued by the ensuing committee.

Review of Existing Specifications—The committee has carefully gone over the existing specifications of the association and has kept in close touch with the action of other technical organizations interested in the subject of wood preservation. As a result, it recommended the elimination of the clause covering specific gravity requirements from the existing recommended specifications Wm 8b for Grades 1, 2 and 3 creosote oil, creosote-coal-tar mixture, preservatives for paving block coal-tar oil, and preservatives for paving block distillate oil, and also the addition of a suitable footnote to each of these specifications to cover the question of specific gravity and the elimination of certain existing footnotes in order to make the specifications consistent with the changes now suggested. The committee also recommends certain renumbering of paragraphs in the specifications for the different grades of preservative oils.

Recommendation is also made to revise the specification for "float test" in the present recommended specifications for methods of sampling and analysis of creosote oil, as well as the complete revision of the section covering coke test in the same specification.

The committee also concurs in the recommendation that the ensuing committee be directed to consider a specification for a suitable grade of creosote oil for brush or open tank treatments as an alternative to carbolineum for use where the latter is not available.

Several papers were included as appendices, including "The Decay of Poles and the Fungi Which Cause It," prepared by C. J. Humphrey, pathologist Bureau of Plant Industry, U. S. Department of Agriculture, Madison, Wis.; "Attack on Chestnut Pole by Carpenter Ants," by Chairman Howard H. George of the committee; "Preservative Oil for Wood Floors," also by Mr. George. Through the courtesy of Earl Stimson, chief engineer of maintenance of the Baltimore & Ohio Railroad, the results of the 1923 inspection of the experimental installation of treated ties at Herring Run, Md., were published as an appendix, and through the courtesy of J. H. Waterman, superintendent of timber preservation of the Chicago, Burlington & Quincy Railroad, the results of the 1923 inspections of the experimental installations of treated ties at various points on his system also included.

The report was signed by M. J. Curtin, W. H. Fulweiler, E. F. Hartman, E. L. Morier, C. A. Smith, E. A. Hoffman, R. V. Achatz, advisory associate; R. C. Cram, sponsor; A. P. Way, vice-chairman, and H. H. George, chairman.

A written discussion on the subject prepared by Roger F. Hosford, read in Mr. Hosford's absence by Warren M. Craft, follows:

"I have been asked to discuss this report, particularly with respect to the parts dealing with brush and open-tank treatment. This report has been very carefully prepared and the committee is fully entitled to the greatest reward which you can give, which is to make use of its recommendations in your own individual practice. I feel that the two principal reasons for the failure of some brush-treating enterprises that have been based upon this experimental work of the forest service are: first, the use of insufficient quantities of preservatives, and, second, the application of the treatment to poles which had not been sufficiently prepared by seasoning to receive it. Green and partially seasoned poles will not permit of proper penetration by the preservative and also tend to open up the thinly treated layer obtained soon after they are set, since they are in no way stabilized with respect to the occurrence of checking. In the application of the brush treatment, another feature to be kept in mind is that of taking care to give the workman proper tools. For example, it is not easy to apply fluid with a brush at the level of the shoulder and avoid having some of the hot fluid reach the hand and the lower arm. A long-handled brush with a gooseneck attachment should be provided for the application of this preservative. With respect to the open-tank treatment section of the report, I have this year had occasion to work on the treatment of green chestnut, and when the time of treatment is made sufficiently long, results with respect to penetration and quantity of creosote absorbed can be obtained which are substantially equivalent to those obtained with poles which have undergone a considerable period of seasoning. The open-tank treatment does not remove all of the water from the outer layers of the butt. The successful treatment of grain poles does not imply that they can be successfully used everywhere. Climatic conditions have a vital effect upon the life of poles. The last point to which I wish to refer is the matter of "perforating" or "puncturing," the preparation for receiving open-tank treatment. This process in the past two years has become commercially available for assisting in the treatment of cedar poles. Through its assistance cedar in a particularly seasoned state, which will not take any appreciable quantity of creosote or show any appreciable depth of penetration unless it is held in an open tank for many hours in hot creosote, has been found to yield satisfactory results when held in hot preservative only the customary number of hours."

R. H. Dalgleish presented a report of the special committee on air reservoir specifications.

Specifications for Air Tanks

Several meetings of this committee were held during the year and a preliminary specification prepared. This was submitted to the equipment committee for criticism and recommendations. The committee has been in touch with the boiler code committee of the American Society of Mechanical Engineers, but has not submitted a specification to it, and feels that the specification should have the approval of the equipment committee before submitting it to the A.S.M.E. While the specification has some points on which this committee and the equipment committee do not agree, they are matters that we believe can be easily adjusted.

This committee is not prepared at this time to recommend the specification for the approval of this association, but recommends that the subject be carried over and assigned to a committee next year for completion.

The report was signed by L. J. Davis, J. A. Leeper and R. H. Dalgleish, chairman.

It was a progress report and in-

dicated that several meetings had been held, during which a number of specifications for unheated pressure vessels had been considered. However, the committee is not ready at this time to submit a specification, recommending that the subject be continued throughout next year. It was brought out in the discussion that followed that the Bureau of Standards had made numerous tests on the various types of pressure vessels and that it would be well for the committee on this subject next year to investigate these tests. A sub-committee of the A. S. M. E. has the same matter under consideration and has been very friendly in co-operating with the association committee on this subject. The boiler code committee has assured this committee that no action will be taken without consulting it.

Wednesday's Session A.E.R.E.A.

The meeting of the Engineering Association on Wednesday afternoon was called to order by H. A. Johnson, vice-president of the association, and was turned over to W. G. Nicholson, president of the Accountants' Association, who presided during the submission of the report of the joint committee on engineering-accounting. In his opening remarks Mr. Nicholson expressed great satisfaction with joint meetings of this kind, which he said tend to foster co-operation between engineers and accountants and to encourage that harmony which is essential on each individual property.

The report of the joint committee was read by J. E.. Heberle, assistant secretary Capital Traction Company, Washington, D. C., and follows:

Joint Committee on Engineering Accounting

This year the committee devoted its effort mainly to a consideration of the existing Interstate Commerce Commission classification of accounts for electric railways with the view of recommending certain fixed sub-divisions which will provide not only a better record system but will facilitate obtaining helpful cost analyses, and presented for consideration such a proposed treatment of the way and structures group of accounts. The committee recommended that its work be continued during the coming year. The number of sub-divisional accounts recommended is shown by the statement in the list below.

The report is signed by the joint commitee: A. W. Grady, J. E. Heberle, Herbert Jackson, Charles H. Lahr, Edwin D. Dreyfus, Charles Rufus Harte, sponsor; Leon R. Brown, co-chairman, and George F. Dinneen, co-chairman.

Road and Equipment Accounts

Way and structures:
Engineering and superintendence (five sub-accounts).
Right-of-way (three sub-accounts).
Other land used in electric railway operations (no sub-accounts).
Grading (five sub-accounts).
Ballast (six sub-accounts).
Ties (two sub-accounts).
Rails, rail fastenings and joints (five sub-accounts).
Special work (four sub-accounts).
Underground construction (nine sub-accounts).
Track and roadway labor (ten sub-accounts).
Paving (ten sub-accounts).
Roadway machinery and tools (no sub-accounts).
Tunnels and subways (no sub-accounts).
Elevated structures and foundations (two sub-accounts).
Bridges, trestles and culverts (eight sub-accounts).
Crossings, fences and signs (four sub-accounts).
Signals and interlocking apparatus (three sub-accounts).
Telephone and telegraph lines (four sub-accounts).
Poles and fixtures (seven sub-accounts).
Underground conduits (four sub-accounts).
Distribution system (seven sub-accounts).
General office buildings (sixteen sub-accounts).
Shops and carhouses (sixteen sub-accounts).
Stations and miscellaneous buildings (sixteen sub-accounts).
Wharves and docks (no sub-accounts).
Park and resort property (three sub-accounts).
Cost of road purchased (no sub-accounts).
Reconstruction of road purchased (no sub-accounts).
Other expenditures, way and structures (no sub-accounts).

Operating Expense Accounts

Way and structures:
Superintendence of way and structures (thirteen sub-accounts, of which seven are for track and roadway and structures and six are for electric line).
Ballast (eight sub-accounts).
Ties (three sub-accounts).
Rails (three sub-accounts).
Rail fastenings and joints (five sub-accounts).
Special work (four sub-accounts).
Underground construction (eight sub-accounts).
Track and roadway labor (forty-two sub-accounts).
Miscellaneous track and roadway expenses (two sub-accounts).
Paving (nine sub-accounts).
Cleaning and sanding track (eight sub-accounts).
Removal of snow and ice (eight sub-accounts).
Tunnels and subways (five sub-accounts).
Elevated structures and foundations (seven sub-accounts).
Bridges, trestles and culverts (nine sub-accounts).
Crossings, fences and signs (four sub-accounts).
Signal and interlocking apparatus (five sub-accounts).
Telephone and telegraph lines (six sub-accounts).
Miscellaneous way expenses (no sub-accounts).
Poles and fixtures (twelve sub-accounts).
Underground conduits (three sub-accounts).
Distribution system (twenty-seven sub-accounts).
Miscellaneous electric line expenses (no sub-accounts).
Buildings, fixtures and grounds (twenty sub-accounts).
Depreciation of way and structures (twenty-five sub-accounts).
Other operations—Dr.
Other operations—Cr.
Equalization—way and structures.

In presenting this report Mr. Heberle indicated that the report was submitted as tentative for the purpose of inviting discussion of this important subject. Mr. Nicholson stated that accurate costs are of particular importance today due to the conditions which exist in the railway industry. M. W. Glover, general auditor West Penn Railways, stressed the advantages to be obtained from co-operation between engineers and accountants. He felt that the duty of handling all general accounts should be entirely in charge of the accountant, but subdivisions for obtaining cost data should be compiled in co-operation with the engineering department. He further expressed the fear that the committee report shows such minute subdivision as to make the accuracy of charges suffer due to the difficulty of training foremen to charge work to the proper accounts.

This same question was raised by C. H. Jones, electrical engineer, Chicago Elevated Railways, who maintained that subdivision of accounts should not be carried to the point where the foreman is required to spend a large amount of his time on clerical duties. T. B. MacRae, general auditor Chicago Elevated Railroads, illustrated the difference in the viewpoints of the accountant and the engineer by pointing out that the accountant thinks in figures, whereas the engineer desires a complete picture of a given situation. In order to maintain the desired contact between the two departments, this property has an engineering auditor who is in a position to compile cost information in the way which is most desirable for the purposes of the engineering department. Mr. MacRae questioned the use of the word "depreciation" in the committee's report and preferred the term "reserve" to indicate more accurately the function of this group of accounts.

The ruling of the United States Supreme Court which fixes the value of a property at the time the rates are made as the proper basis for rate making was given by C. R. Harte, construction engineer the Connecticut Company, as a primary reason in favor of accurately subdivided cost accounts. He stated that a knowledge of past costs is essential to the compilation of existing values for rate-making purposes. This value, he stated, can be set up only when cost figures of the property are also available in terms of man-hours and materials. In carrying out the work of cost keeping he felt that the engineer should co-operate in preparing the schedule of subdivisions and that the accountant should keep the records. Mr. Harte expressed satisfaction with the report of the committee as an initial step in the study of this problem and as a basis for further discussion and work.

Further discussion by H. H. George, engineer maintenance of way Public Service Railway; Herbert Jackson, supervisor underground lines Washington Railway & Electric Company, and Mr. Nicholson brought out the difficulty of properly making charges when accounts are too much subdivided, but emphasized the importance of carrying this subdivision as far as practicable. W. B. Yereance, consulting engineer, South Orange, N. J., commented on the report of the committee and pointed out that it fulfills the proper function of such a paper in that it outlines the general principles involved in the problems considered. The compilation of

detailed accounts, he felt, was a matter largely governed by the local conditions existing on the individual properties. He agreed that the services of an engineer in the auditing department provides for the necessary co-operation between the two departments on a large property and advocated frequent council meetings as a means of obtaining similar co-operation on smaller properties. He stated that detailed cost figures on specific jobs should be furnished by the auditor, but that such reports should be prepared only as long as the information is of value and then should be discontinued.

Mr. Harte, Mr. Spencer, Mr. Nicholson and Mr. Heberle concluded the discussion by taking up the question of charges for new construction and the division of charges between capital and maintenance accounts. It was the general opinion that the engineering department should co-operate in this work by indicating as far as possible the proper classification for work performed and that there should be a mutual responsibility. The report was accepted by the association and it was agreed that the work of this committee should be continued.

The report of the committee on way matters was abstracted by W. F. Graves, chairman.

Way Matters

Seven subjects are discussed in the report including one outstanding subject, viz., the review of existing standards. Conclusions and recommendations are submitted on all of the subjects assigned.

Standardization of Frogs—This subject has been considered by the committee on way matters since 1910 and revisions made from time to time, as the study of the subject developed. It is felt that the required number of frogs can be considerably reduced, probably by a process of elimination, that the subject warrants further study, and that definite recommendations can be made in another year. After carefully considering and reviewing the previous work, this year's committee made recommendations as to several revisions which should be incorporated in the Manual.

Car Clearance Easements—This subject was thoroughly considered and reported on in 1922 and the present committee considers it can go no further in this study from its standpoint. The subject should be discontinued as a way subject, but steps should be taken by the executive committee to appoint way engineers on the committee on unification of car design.

Design of Substitute Ties—A progress report is submitted and the results of an investigation into the records of the United States Patent Office are given. Co-operation with the American Railway Engineering Association has been obtained by the appointment of a way engineer to represent the association on the tie committee of the American Railway Engineering Association, whereby benefit may be had from its extensive and thorough study of this subject. The subject of the design of substitute ties, particularly for use in paved streets, should be continued. A thorough investigation and study should be made of the substitute ties now available, the degree to which they have been used and the results of their use.

Design of Small Bridges, Trestles and Culverts—With a view to presenting information on good current practice, this subject was considered jointly with the committee on buildings and structures. The conclusions reached are stated in the report of the latter committee. It is the opinion that the subject cannot receive from two large committees the careful attention that it merits, and that it could be more satisfactorily handled by one committee. The subject of bridge, culvert and trestle design is one primarily concerning way engineers, these structures being generally designed and constructed by them. It is therefore recommended that the study of this subject be continued and that it be assigned to the ensuing committee on way matters. It is recommended that its further study by the committee on buildings and structures be discontinued.

Design of Track Construction for Paved Streets—A specification is submitted which is recommended for adoption. A similar recommendation is to be made by a concurrent committee of the American Society for Municipal Improvements, with which this committee co-operated. These specifications are very complete, covering the subjects of excavation, top soil and surface drainage, types of foundation, rails, rail joints, bonds, rail fastenings, ties, pavement base, rail filler and pavement. It is recommended that the further study of this subject be discontinued.

Welded Rail Joints—The welded rail joint committee of the American Bureau of Welding having been organized to pursue the scientific investigation of this subject in 1922, the subject was not assigned to the 1923 committee on way matters except to co-operate with the welded rail joint committee.

The most important work, that of securing funds for financing the work, was done after the report was prepared. The sum of $10,000, appropriated at the convention in Chicago, has been supplemented by contributions from individual railway companies and manufacturers, so that the total fund subscribed up to July 1, 1923, amounted to $23,477.

The first step in the actual testing of joints is the testing at various institutions of sample joints made up by certain railways in accordance with their own standards. The railway companies which will make up these joints have been selected so that samples will be secured representative of the four principal methods of welding, viz., cast-welded joints, thermit joints, seam-welded joints, Lorain bar weld and buttweld. Each company has been instructed to make twelve joints under actual service conditions, shipping six specimens to the Bureau of Standards, Washington, for tensile and repeated impact test, three specimens to Purdue University for cross-bending tests and three specimens to the University of Illinois for drop tests. A number of companies have made and forwarded these sample joints, but at the time the report was written no actual tests had been made.

The Emery machine at the Bureau of Standards will be used for tensile tests. It is not equipped with heads which will take the full rail section, and it has therefore been necessary in the past to plane away a portion of the head and base of the rail in order to insert it in the machine. This has resulted during a number of previous tests made by the bureau, in the breaking of the rail where it was weakened by the planing, thus precluding the completion of the test. In order to overcome this difficulty, the committee has designed and built special grips for the testing machine, which will permit testing the full section without cutting.

One of the most important tests considered by the committee is the repeated impact test. But the committee has been unable to find any form of testing machine entirely suitable for this work. However, considerable research has been done along this line by E. J. McIlraith, Chicago Surface Lines, and an ingenious method of determining the impacts caused by car wheels has been developed.

Special Test Track Developed

Final plans of the rotary machine, designed for testing joints in circular tracks under as nearly service conditions as possible, were adopted and an appropriation was made to cover the estimated cost. In addition to the tension, bending, impact and service tests contemplated, there will be a number of special tests, such as measuring impact by Smith's decelerometer, tests for hardness and abrasion, microscopic examination and chemical analysis of weld metals.

This is one of the most important subjects for way engineers at the present time and warrants a great deal of further study and investigation. This committee recommends that the subject be assigned to the ensuing committee for further report.

Review of Existing Standards—In view of the pending revision of the Engineering Manual, the committee made a thorough review of the way matter specifications. Numerous recommendations for additions, changes and withdrawals from the Manual were made.

The more important ones are that the executive committee appoint a special committee to co-operate with all other committees of the Engineering Association to recommend a specification for "symbols for recording surveys"; that the ensuing committee on way matters be instructed to submit a design and specification covering "standard design and specification for

TABLE I—ANALYTICAL METHOD—TOTAL POWER SUPPLY AND DISTRIBUTION COST PER KILOWATT, ARRANGED AS TO DISTRICTS OF VARYING LOAD DENSITIES

Units	L.D. = 160 Power Supply Cost	L.D. = 160 Distribution Cost	L.D. = 160 Total	L.D. = 80 Distribution Cost	L.D. = 80 Total	L.D. = 40 Distribution Cost	L.D. = 40 Total	L.D. = 20 Distribution Cost	L.D. = 20 Total	L.D. = 10 Distribution Cost	L.D. = 10 Total	L.D. = 5 Distribution Cost	L.D. = 5 Total
1-1,000	$10.67	$1.05	$11.73	$1.49	$12.16	$2.11	$12.78	$2.98	$13.65	$4.22	$14.89	$5.96	$16.63
1-1,500	9.67	1.26	10.93	1.78	11.45	2.52	12.19	3.56	13.23	5.04	14.71	7.12	16.79
2-1,000	10.47	1.49	11.96	2.10	12.57	2.97	13.44	4.20	14.67	5.94	16.41	8.40	18.83
1-2,000	8.90	1.42	10.32	2.01	10.91	2.84	11.74	4.02	12.92	5.68	14.58	8.03	16.97
1-2,500	8.17	1.56	9.73	2.21	10.38	3.12	11.29	4.42	12.59	6.25	14.42	8.83	17.00
3-1,000	10.38	1.82	12.20	2.58	12.95	3.64	14.02	5.16	15.54	7.30	17.68	10.30	20.68
2-1,500	9.57	1.78	11.35	2.51	12.08	3.58	13.15	5.03	14.60	7.10	16.67	10.05	19.62
1-3,000	7.43	1.67	9.10	2.37	9.80	3.34	10.77	4.73	12.16	6.70	14.13	9.46	16.89
2-2,000	8.73	2.01	10.74	2.84	11.57	4.02	12.75	5.69	14.42	8.05	16.78	11.38	20.11
3-1,500	9.50	2.17	11.67	3.07	12.57	4.34	13.84	6.14	15.64	8.68	18.18	12.30	21.80
2-2,500	8.04	2.21	10.25	3.13	11.17	4.42	12.46	6.25	14.29	8.83	16.87	12.50	20.54
3-2,000	8.69	2.46	11.15	3.48	12.17	4.92	13.61	6.96	15.65	9.85	18.54	13.90	22.59
2-3,000	7.30	2.37	9.67	3.37	10.67	4.73	12.03	6.70	14.00	9.47	16.77	13.40	20.70
3-2,500	7.99	2.70	10.69	3.84	11.83	5.42	13.41	7.65	15.64	10.82	18.81	15.30	23.29
3-3,000	7.26	2.90	10.16	4.12	11.38	5.80	13.06	8.21	15.47	11.60	18.86	16.42	23.68

solid manganese steel electric over steam railroad crossing" and co-operate with the committee on tracks of the American Railway Association.

It was also thought that the sectional committee of the A.E.S.C. having in hand the design of plain girder rails for use in paved streets should broaden its scope to include the design of joint plates suitable for use with those rails, and that the size and number of holes, length of plates, etc., be standardized.

The ensuing committee on way matters should be instructed to submit a specification "rules for determining the gage of track on curves," having in mind the work of the special committee on wheel and rail head contours.

The report was signed by C. A. Alden, V. Angerer, S. Clay Baker, W. R. Dunham, E. B. Entwisle, G. C. Estill, R. B. Fisher, H. Fort Flowers, A. E. Harvey, J. H. Haylow, E. M. T. Ryder, A. T. Spencer, F. Tingley, J. B. Tinnon, W. W. Wysor, C. F. Gailor, secretary; H. H. George, vice-chairman; W. F. Graves, chairman, and R. C. Cram, sponsor.

In the discussion of this report Howard H. George, engineer maintenance of way Public Service Railway of New Jersey, explained the results of several meetings with the American Society for Municipal Improvements in deciding upon the specifications for street railway track construction. The specifications submitted with the report on way matters will be presented to the American Society for Municipal Improvements for action at its 1923 convention.

V. Angerer, vice-president William Wharton, Jr., & Company, Inc., explained the co-operation which the committee on way matters had with the way and track committees of the American Railway Association. W. W. Wysor, chief engineer United Railways & Electric Company, Baltimore, Md., gave an abstract of subject No. 5 of the report on way matters relating to the work of the committee on welded rail joints. He supplemented this by an outline of the work which had been accomplished by the committee on welded rail joints in co-operation with the American Bureau of Welding and gave information as to progress which had been made since the report of the committee on way matters had been printed.

The report of the committee on way matters was approved for all subjects except No. 6, and in this the recommendations of the standards committee were approved. A vote of appreciation was recorded for the excellent co-operation of member companies in making up track joints for tests.

The report of the committee on automatic substations was abstracted by Walter E. Bryan, chairman of the committee.

Automatic Substations

The committee assigments were: (A) To outline a method or methods for studying the economics of the subject, which will serve as a guide for the study of any particular situation. (B) On the basis of the above outline, study and work out a number of specific examples, comparing costs and merits of different power distribution layouts. (C) To determine, if possible, the economic limits to which track drops can be reduced.

In connection with assignment A, the committee also undertook a study of the trolley voltage most advisable for congested districts.

Economies of Substation Location

It has been rather general practice in previous studies to draw up comparisons between plans involving various sizes and grouping of units on what might be termed a practical or "cut-and-try," basis. The present committee felt that more satisfactory comparisons might be obtained by the use of an analytical method, based on an idealistic and uniform arrangement of the distribution feeders. There are situations, however, where such a method would not apply, and recourse must be had to the so-called practical method. The committee, therefore, submitted both methods.

First Method — The particular advantage of the analytical method lies in the fact that the results are based on a uniform system of distribution and the preliminary results, therefore, are more truly comparable than if the distribution feeders were designed at the start on the requirements of the individual lines. After the completion of the analytical study, detailed layouts would have to be made, which, however, would be confined to those substations set-ups which from the analytical study, showed the greatest economy.

The analytical method has its principal field of usefulness where a study is being made of a large urban system, or where the district under consideration has a fairly uniform load density. The results cannot be assumed to be conclusive, but may be materially modified by the supplementary detailed studies. The method readily lends itself, however, to a comparison of sizes and combinations of units extending over a wide range.

The measure of economy is taken as the summation of annual costs per kilowatt delivered at the car. These costs are subdivided under "Power Supply" and "Power Distribution." Values of distribution voltage, load per feeder, etc., are assumed, together with unit costs of construction and operation, as governed by local conditions. The study shown covers substations ranging from 1,000 kw. to 9,000 kw. in capacity, it being felt that stations larger than 9,000 kw. would undoubtedly be manually operated. Commercial sizes of converters from 1,000 kw. to 3,000 kw. are considered.

The committee prepared a set of tables as a part of its study, showing the various steps in the calculation for the range of capacities mentioned. Similar tables would have to be made up for any particular case. These tables include the assumed unit value and cost; annual cost for power supply and annual cost for distribution, based on standard meters.

Table I, reproduced herewith, sums up the cost of power supply and power distribution, arranged as to districts of varying load density. The cost of power supply is independent of load density, while it is evident that the cost of distribution will vary with the load density of the district served, varying inversely as the square root of the density.

Table II is a summation of the investment cost of the power supply and power distribution units. Similar to the distribution costs shown in Table I, distribution investment is inversely proportional to the square root of the load density. Hence, if the load density of any district is known, the approximate first cost of any contemplated arrangement may be obtained.

TABLE II—ANALYTICAL METHOD—INVESTMENT COSTS PER KILOWATT

	Investment per Substation					Investment in Distribution L.D. = 143				Distribution Investment per Kilowatt Total Investment, per Kilowatt					
										Variable Density					
Units	Electrical Equipment	Building	Site	Total	Per Kw.	Feeder	Added Electrical Equipment	Total	Per Kw.	L.D. = 160	L.D. = 80	L.D. = 40	L.D. = 20	L.D. = 10	L.D. = 5
1-1,000...	$32,000	$8,000	$5,000	$45,000	$45.00	$2,000	$560	$2,560	$2.56	$2.41	$3.41	$4.82	$6.82	$9.64	$13.64
										47.41	48.41	49.82	1.82	54.64	58.64
1-1,500...	45,000	10,000	5,000	60,000	40.00	3,000	788	3,788	2.53	2.93	4.15	5.86	8.30	11.72	16.60
										42.93	44.15	45.86	48.30	51.72	56.60
2-1,000...	64,000	14,400	9,000	87,400	43.70	4,000	1,120	5,120	2.56	3.42	4.84	6.84	9.68	13.68	19.36
										47.12	48.54	50.54	53.38	57.38	63.06
1-2,000...	56,000	12,000	9,000	77,000	38.50	4,000	980	4,980	2.49	3.32	4.70	6.64	9.40	13.28	18.80
										41.82	43.20	45.14	47.90	51.78	57.30
1-2,500...	65,000	13,500	10,000	88,500	35.40	5,000	1,135	6,135	2.45	3.66	5.18	7.32	10.36	14.64	20.72
										38.06	40.58	42.72	45.76	50.04	56.12
3-1,000...	96,000	20,800	12,000	128,800	42.20	6,000	1,680	7,680	2.56	4.18	5.91	8.36	11.82	16.72	23.64
										47.38	48.11	50.56	54.02	58.92	65.84
2-1,500...	90,000	18,000	12,000	120,000	40.00	6,000	1,575	7,575	2.53	4.13	5.84	8.26	11.68	16.52	23.36
										44.13	45.84	48.26	51.68	56.52	63.36
1-3,000...	72,000	15,000	12,000	99,000	33.00	6,000	1,260	7,260	2.42	3.96	5.60	7.92	11.20	15.84	22.40
										36.96	38.60	40.92	44.20	48.84	55.40
2-2,000...	112,000	21,600	14,000	147,600	36.90	8,000	1,960	9,960	2.49	4.69	6.64	9.38	13.28	18.76	26.56
										41.59	43.54	46.28	50.18	55.66	63.46
3-1,500...	135,000	26,000	16,000	177,000	39.33	9,000	2,360	11,360	2.52	5.04	7.13	10.08	14.26	20.16	28.52
										44.37	46.46	49.41	53.59	59.49	67.85
2-2,500...	130,000	24,300	16,000	170,300	34.06	10,000	2,280	12,280	2.46	5.19	7.34	10.38	14.68	20.76	29.36
										39.25	41.40	44.44	48.74	54.82	63.42
3-2,000...	168,000	31,200	19,000	218,200	36.37	12,000	2,940	14,940	2.49	5.76	8.15	11.52	16.30	23.04	32.60
										42.13	44.52	47.89	52.67	59.41	68.97
2-3,000...	144,000	27,000	19,000	190,000	31.67	12,000	2,520	14,520	2.42	5.59	7.91	11.18	15.82	22.36	31.64
										37.26	39.58	42.85	47.49	54.03	63.31
3-2,500...	195,000	35,100	22,000	252,100	33.61	15,000	3,410	18,410	2.45	6.38	8.95	12.66	17.90	25.32	35.80
										39.94	42.56	46.27	51.51	58.92	69.41
3-3,000...	216,000	39,000	24,000	279,000	31.00	18,000	3,780	21,780	2.42	6.85	9.68	13.70	19.36	27.40	38.72
										37.85	40.68	44.70	50.36	58.40	69.72

Use of First Method—Assuming that a study is to be made of a district serving a demand load of 6,000 kw. from a load density of 160 kw. per 1,000,000 sq.ft., and that Table I is applicable to the case in point, it is evident that there are combinations to be considered, neglecting those combinations requiring the use of more than one kind of unit. These combinations are set forth in Table III.

The first and second plans show the greatest economy, but as only two units are required to feed the total load in either case, continuity of service would be jeopardized if either the first or second plan was adopted. Plan No. 9 involves the use of three-unit stations, and would undoubtedly be eliminated. Plan No. 8 would probably also be eliminated on account of its relatively high cost.

This leaves Plans Nos. 3 to 7, inclusive, for consideration. The maximum difference in annual cost is $1.41 per kilowatt of capacity, making a total for the 6,000 kw. area, of $8,460. Quite a range as to number of stations is provided, the range being from one to six stations. Single-, double- and triple-unit stations remain in the list, although the triple-unit stations (Plan No. 5) would probably be eliminated for practical reasons. The use of four machines would tend to insure reasonable reliability of service, and it will be noted that Plan No. 4, four single-unit stations with 1,500-kw. rotaries, has a comparatively low annual cost.

Having eliminated, for the reasons given, five of the plans, the engineer would proceed to make a detailed study of each of the remaining plans. These studies would include in each case the tentative selection of sites, the laying out in detail of complete distribution and transmission systems, and the computation of fixed charges and power loss costs on the basis of the revised layout.

Having brought this economic study to a conclusion, the engineer would next consider certain practical points which might affect the ultimate selection from an operating standpoint. Among such points might be mentioned: (a) Desirability of two-unit as compared with single unit-stations; (b) desirability of the use of a certain size and type of unit; (c) availability of substation sites; (d) availability of underground conduit for transmission cable; (e) the importance of electrolysis mitigation.

Second Method—The difference between the second method—which might be termed a practical (as distinguished from an analytical) method—and the first method, is, briefly stated, that under the first method consideration is given to practically all possible sizes and combinations of units in the preliminary analytical study, whereas under the second method the tentative selection of one or two sizes at once eliminates others from the preliminary study.

The second method readily lends itself to the study of small areas or areas of varying load density. The engineer in many cases is confronted with the problem of relieving an existing station of overload by the installation of an automatic station at some point in the district served by the existing station. Under these circumstances the size and general location of the new station are fixed by conditions, and an abbreviated type of study along the lines of the second method is all that is necessary.

The method, as set out below, follows what has been rather general practice in such studies, and the committee has simply endeavored to set down in concrete form the cardinal points of such a method By its very nature, the method is a flexible one and permits of variation (as dictated by local conditions) as the study progresses

Outline of Second Method—1. Prepare a complete table of the costs, load constants, etc., entering into the calculation.

2. Prepare a car spot diagram (say on a maximum half-hour basis) for the area to be served and divide into feeder sections of sizes determined by load density, traffic conditions and other practical considerations. Determine the load and center of load for each section, checking the former, where possible, by ammeter readings at existing stations.

3. If the size of the general area under consideration warrants, divide the entire area into two or three districts, i.e., heavy-, medium- and light-load districts, as determined by the load density in various sections.

4. Assume, tentatively, a size of unit best fitted, from a practical standpoint, for the particular district under consideration and by the center of load method fix the theoretical location of each unit.

5. On the basis of the locations as determined, lay out the distribution system, designing the various feeders with regard to load to be carried, voltage drop, equalizing capacity between stations, etc., and using commercial sizes of wire.

6. Design the transmission system, basing calculations upon capacity required for normal service and making proper allowance for continuity of service in case of cable failure.

7. On the basis of the calculations outlined above, draw up a table showing the first costs and annual costs of the various layouts.

8. Up to this point the calculations have been based on one size of unit (for each district), arranged in single-unit and perhaps two-unit stations. The results derived may indicate the advisability of assuming a second size and making additional layouts on this basis.

9. Having brought the study to this point economic comparisons for a number of combinations are available. Further consideration must then be given to the practical merits of the various plans.

Specific Examples—It will be evident to those who have made such studies that the working out in detail of a specific example involving a large area is quite a task. Time did not permit of the application of the first method to a specific study, although it is believed that sufficient explanation has been given to make the method clear. A specific example showing the use of the second method, however, was worked out in detail.

The Economic Limits to Which Track Drops Can Be Reduced—Assuming that the track bonds are in good condition there are three principal methods of reducing track potential gradients: first, by installing cable in parallel with the rail; second, by an insulated return system and third, by increasing the stations feeding a given area.

The first two methods require the use of additional copper cable. It is evident that if the current flow in such cable is below the economic value, the use of the wire, while perhaps advisable from the standpoint of reduction of rail gradients, cannot be justified from a purely economic point of view.

Based on the data used in the specific cases included in the report, the peak load value of current for a 1,000,000 circ.mil cable which gives the greatest economy (balancing fixed charges against power losses) is 600 to 700 amp. Such a current will produce a drop of 6 or 7 volts per 1,000 ft. of cable.

If we assume a double track line with four rails, each equal to 1,000 000 circ.mil of copper wire, and having a potential gradient of 7½ volts per 1,000 ft., it is apparent that the installation of one 1,000,000 circ.mil cable in parallel with the rails will reduce the gradient to 6 volts, which is equivalent to a flow of 600 amp. in the cable. This result leads to the conclusion that where track gradients are below the figure assumed, the installation of parallel copper is not justifiable from an economic standpoint.

If the negative feeders in an insulated return system are designed to carry approximately 600 or 700 amp. (maximum) per 1,000,000 circ.mil, the negative drop to the bus will be higher than in the case of an uninsulated system and the negative power loss, therefore, greater. The potential gradients which ordinarily obtain on uninsulated systems are of such value that any reduction by means of an insulated return system can only be made at a financial sacrifice.

As to the third method, namely an increased number of stations, the committee is of the opinion that any layout of substations, which is justified from an economic standpoint, would result in track gradients of such value as practically to eliminate danger from electrolysis.

The matter might be summed up as follows:

As a general thing, the reduction of track gradients by the use of parallel feeders or an insulated return system can only be accomplished at the sacrifice of economy. The use of automatic stations, due to the increased number which can be justified, will reduce track gradients to values which from an electrolysis standpoint are safe.

An increase in the number of distribution centers in heavily congested districts with attendant increase in trolley voltage, has, in one or two specific instances, resulted in an increase in demand load and energy consumption. This is due to the fact that whereas an increase in the number of stations reduces feeder losses, the increased voltage results in higher rheostatic losses at the car which may more than offset the saving in feeder losses.

In districts where the distance between stops is relatively long and vehicular traffic light, considerable free running is possible and the benefits of high voltage can be realized. This is not the case, however, in congested districts, where schedule speeds are dependent very largely upon general traffic conditions.

Data obtained under actual service conditions indicate that the schedule speeds possible in heavily congested districts can be obtained with a trolley voltage materially lower (150 to 200 volts) than the general or system voltage. It is evident, however, that satisfactory operating conditions, at street intersections for instance, require more than 400 or 450 volts.

Tests taken under service conditions also indicate that for congested districts, voltages between 400 and 500 result in the greatest power economy, due to the low rheostatic losses. These tests bear out the statement that increased voltage increases power costs.

Interconnection of Stations Common

It is general practice to interconnect adjacent stations through tie feeders, and the difference in bus voltage at the various stations under such conditions is limited by the feeder design, particularly where compound-wound converters are used. The use of shunt-wound converters, however, provides a very satisfactory means of regulating the voltage, for at times of heavy load the voltage is automatically lowered, while at times of light load (when traffic is lighter and advantage can be taken of high voltage) the voltage is reduced comparatively little.

It is impossible to name a figure which will satisfy all elements of the problem under various conditions. A voltage of from 500 to 550, however, seems sufficiently high to satisfy service requirements, although due to interconnection of stations a bus voltage much below 550 volts (based on a general system voltage of 600 volts) could hardly be obtained. The committee simply wishes to call attention to the fact, first, that comparatively low voltages are possible in heavily congested districts without impairment of service, and second, that increase of voltage in such districts, although of no benefit, will result in increased costs of power, particularly demand charge.

The report was signed by C. A. Butcher, J. M. Drabbelle, C. H. Jones, F. W. Peters, E. H. Scofield, L. D. Bale, and W. E. Bryan, chairman.

TABLE III—COMPARISON OF VARIOUS COMBINATIONS TO SUPPLY A DISTRICT WITH A DEMAND LOAD OF 6,000 KW. AND A DENSITY OF 160 KW. PER 1,000,000 SQUARE FEET.

Plan	No. of Stations	No. of Units per Station	Total No. of Units	Capacity of Units, Kw.	Total Cost per Kw. of Capacity
1	2	1	2	3,000	$9.10
2	1	2	2	3,000	9.67
3	3	1	3	2,000	10.32
4	4	1	4	1,500	10.93
5	1	3	3	2,000	11.15
6	2	2	4	1,500	11.35
7	6	1	6	1,000	11.73
8	3	2	6	1,000	11.96
9	2	3	6	1,000	12.20

In the discussion following the presentation of this report Adrian Hughes, Jr., superintendent of power United Railways & Electric Company, Baltimore, Md., told of the studies which were being made in Baltimore in regard to the use of automatic substations. He brought out the fact that local conditions govern the solution of the problem, and he suggested that the work of the committee on automatic substations be continued.

A written discussion by R. L. Weber, electrical engineer Kansas City Railways, was read by G. C. Hecker, special engineer of the American Electric Railway Association. This discussion described an analysis of substation requirements and location as carried out in Kansas City and results of a study that had been made.

Ralph H. Rice of the Board of Supervising Engineers, Chicago, Ill., presented several curves showing costs of substations as the number is increased. He also presented data he had worked out to show how the distribution costs vary with the number of substations. These figures were obtained by applying the methods recommended by the committee on automatic substations and included in the report.

D. D. Ewing, professor of electric railway enginering Purdue University, said that the fundamental basis of the power problem should be kept clearly in mind in arriving at any particular conclusions, and that various theoretical methods used would be influenced largely by fundamental considerations.

M. B. Rosevear, superintendent of distribution Public Service Railway of New Jersey, said that to him the outstanding feature of this committee's report, and, in fact, of previous reports of other committees dealing with this subject, was the great economy that resulted from the use of automatic substations and the increased advantages that accrued from their use.

The report of the committee on automatic substations was accepted with a vote of appreciation for the work done and for the additional points that had been brought out in the discussion. The meeting then adjourned.

Thursday's Session A.E.R.E.A.

The report of the committee on power distribution was abstracted by M. B. Rosevear, chairman, except for subjects 1, 2, 4 and 8, which were abstracted by sub-committee chairmen. Subject No. 1 was abstracted by Charles H. Jones, electrical engineer Metropolitan West Side Elevated Railway, Chicago, Ill.; subjects 2 and 4 by H. S. Murphy, assistant electrical engineer Philadelphia Rapid Transit Company, and subject 8 by Adrian Hughes, Jr., superintendent of power United Railways & Electric Company, Baltimore, Md. Each subject was represented separately and discussed before proceeding to the following subject.

Power Distribution

The report of the committee on power distribution is divided into five principal subjects, dealing with catenary overhead construction, trolley wire specifications, pole reclamation, specifications for low conductivity trolley wire, industrious co-ordination, temporary connections to trolley wire, overhead construction for trackless trolleys, and review of existing standards. A list of power distribution matters which are being considered by other special committees and by sectional and technical committees under the auspices of the A. E. S. C. is also included.

The committee recommends that subjects assigned for 1924, in addition to those which should be continued, are concrete poles, return circuits, including bonding, standard approach ears or flexible tips, at least the ruling dimensions, standardize various types of suspensions, particularly the ruling dimensions.

Specification for Catenary Overhead Construction.—The sub-committee has prepared a detailed specification for catenary overhead construction, other than for steam railroad electrification. This specification deals primarily with the trolley wire and its supporting catenary system. The various paragraphs cover the supporting system, car clearances, trolley height, spacing of poles and pullovers, with accompanying diagrams and tabulations. The method of locating trolley wire on curves is given, with tables and graphic charts from which may be readily computed the offset required for various conditions as to trolley height, super-elevation and curvature of track, height of car and length of pole. Other graphic charts are included giving the relation between sag and tension in loaded and unloaded messengers for pole spacings from 150 to 300 ft. for steel messenger and for 300 ft. spacing for copper messenger. Temperature correction charts are included in every instance. The method of using all curves is completely explained in the text.

The specifications also include sag-tension curves for trolley wire under similarly varying conditions and cover auxiliary contact wires, hangers, steady strains, anchors and feed taps.

It is recommended that the specification be approved as a miscellaneous method and practice, and that the committee for next year be instructed to put the specification in final form for submission as a recommended specification to the 1924 convention.

It is also recommended that the 1924 committee be instructed to prepare specifications for catenary suspension materials.

Trolley Wire Composition and Wear. Specifications for Round and Grooved Hard-Drawn Copper Trolley Wire.—The sub-committee has compiled data relative to trolley breaks from information submitted by twelve companies, well distributed geographically. These data cover 3,300 trolley breaks, for 5,300 miles of overhead line, over a maximum period of two years. Three tabulations are included: (1) Trolley breaks per mile of single track, (2) analysis of causes of trolley wire failures, (3) summary of causes of trolley wire failures.

These are followed by quoted recommendations of distribution engineers from widely separated geographical locations as to methods of reducing the number of failures.

There is a discussion of the need of securing further data, particularly of a quantitative nature, and a broad research program is proposed, including:

1. The preparation of detailed information by distribution engineers of member companies.

2. The writing of a detailed history of at least one complete section of trolley wire by co-operating member companies.

3. Co-operation with committee on welded rail joints using proposed rotary service testing machine to make comparative tests on various kinds of trolley wire, fittings and collector devices.

4. Employment of a research engineer, or founding a research fellowship at some university, to study the manufacture and use of trolley wire, with such laboratory work as necessary.

As a result of joint action with the American Society for Testing Materials, a revised specification for hard-drawn copper trolley wire is presented.

It is recommended that: (1) The study of trolley wire wear be continued, including causes of wear and failure. (2) The proposed research program be approved and undertaken. (3) The revision of specification Dw 3b, for round and groved, hard-drawn copper trolley wire be approved. (4) Appropriate action be taken, so that the revised trolley wire specification may be presented to the American Engineering Standards Committee for approval, if possible, as an American standard. The American Society for Testing Materials to be invited to join with our association in presenting the matter to the A. E. S. C.

Pole Reclamation.—Reference is made to the report of the committee on wood preservation, particularly that portion relative to treatment of wood poles after erection.

It is recommended that further study of pole reclamation be dropped for the present.

Specifications for High Strength, Low Conductivity, Trolley Wire.—Reference is made to a study of existing specifications and discussion with the American Society for Testing Materials sub-committee.

Certain tentative values for tensile strengths and twist tests of high-strength trolley wire are submitted, in order to promote discussion.

It is recommended that the A. E. R. E. A. join the A. S. T. M. in requesting the appointment of a sectional committee under the auspices of the A. E. S. C. to prepare an American standard specification for high-strength trolley wire.

Inductive Co-ordination.—The sub-committee has studied and discussed this subject, including certain data jointly promulgated by the National Electric Light Association and the Associated Bell Telephone Companies. Certain information has been gathered from member companies and an additional questionnaire prepared for use by their representatives if and whenever an American committee is formed by various interested national bodies. If the American committee is formed the sub-committee can render such assistance to its representatives as necessary.

It is recommended that the study of inductive co-ordination be continued. If no American committee is formed, it is recommended that the committee on power distribution be authorized to co-operate with proper committees of other national bodies.

Temporary Connections to Trolley Wire.—Data have been collected as to various devices now in use for temporary connections to trolley wire, particularly for welders and other apparatus drawing heavy currents.

The sub-committee describes and illustrates several typical devices which it is believed prevent damage to the trolley wire if properly used.

It is recommended that the subject be continued for another year.

Overhead Construction for Trackless Trolley.—The sub-committee presents information relative to overhead construction for trackless trolley, together with typical illustrations.

It is recommended that the subject be continued for another year.

Review of Existing Standards—The committee submits a detailed discussion of each section of the manual under the heading "Power Distribution." In the main, no changes are suggested, but the following recommendations are made:

Df 2b—Specification for galvanizing or sherardizing on iron and steel. This should be included in the new manual with an explanatory note that it has been referred to the A. E. S. C.; that some objections to the present specification have been raised; and that it would probably be revised to some extent by a sectional committee before being approved.

Ds 2c—Specification for 600-volt di-

rect-current overhead trolley construction. In the new Manual there should be added an introductory paragraph referring to other specifications for materials such as Df 4d, overhead line materials; Ds 3c, selection of poles; etc.

Dw 1c — Standard grooved trolley wire sections. This section should be withdrawn from the manual when the revision of specification Dw 3b for round and grooved, hard-drawn, copper trolley wire is approved.

Block Signal Specifications. — The committee discusses the need of referring signal matters to some specific committee. It has reviewed existing signal specifications and submits its recommendations on account of the pending republication of the manual.

It is recommended that:

1. The question of assigning block signal matters to either the committee on power distribution or to a special committee be referred to the executive committee for decision.

2. The following sections be withdrawn from the Manual because of changes in the art and pending action by a committee during 1924:

Ss 7b—Use of continuous track circuits for the control of automatic signals for high speed interurban service.
Ss 8a—Methods of signaling single-track suburban railways for headway between 5 and 20 minutes and speed not exceeding 20 m.p.h.
Ss 9a—Methods of signaling double-track suburban railways for headway between 1 and 10 minutes and speed not exceeding 30 m.p.h.
Ss 10a—Methods for signaling single-track interurban railways for headway not less than one hour and speed 40 to 60 m.p.h.
Ss 11a—Methods for signaling single-track interurban railways for headway as frequent as 15 minutes for trains in several sections and speed 40 to 60 m.p.h.
Ss 12a—Methods for signaling double-track interurban railways for headway as frequent as 5 minutes and speed 40 to 60 m.p.h.
Ss 13a—Sizes of lenses for use in light signals.

3. The other signal sections in the manual be carefully reviewed during 1924.

The report was signed by J. Walter Allen, Robert L. Allen, S. H. Anderson, L. W. Birch, H. G. Burd, Leslie E. Delf, Ralph W. Eaton, D. D. Ewing, L. F. Griffith, C. L. Hancock, H. D. Hawks, C. J. Hixson, Adrian Hughes, Jr., Charles H. Jones, John Leisenring, F. McVittie, H. S. Murphy, H. A. Pharo, W. Schaake, A. Schlesinger, James Scott, F. J. White, Charles R. Harte, sponsor, and M. B. Rosevear, chairman.

A written discussion of subject 1 by O. M. Jorstad of the Westinghouse Electric & Manufacturing Company was read by Mr. Rosevear. Several corrections in the printed report were called to the attention of the association, on pages 34, 35 and 51. These corrections were accepted by the convention and will be changed in the final report.

Subject No. 2 on trolley wire composition and wear was discussed by J. F. Neild of the Toronto Transportation Commission, who gave some results that have been accomplished in Toronto by following the recommendations contained in the committee's report. Mr. Neild said that the recommendations should be backed up by all operating companies and followed closely.

The subject of overhead construction for trackless trolley was discussed by J. F. Neild of the Toronto Transportation Commission, Adrian Hughes, Jr., superintendent of power, United Railways & Electric Company of Baltimore, Md., and H. S. Murphy, assistant electrical engineer Philadelphia Rapid Transit Company. Mr. Neild told of some of the difficulties they had in Toronto with overhead construction, while operating trackless trolleys, and changes that were made to overcome them. They use a 30-in. spacing of trolley wire and use standard line material in Toronto. He felt that subsequent committees should make recommendations for a standard spacing to be adopted by the association. Mr. Murphy said that they use a 24-in. spacing in Philadelphia and use standard line material. Mr. Hughes said they use a 24-in. spacing of trolley wires for trackless trolley operation in Baltimore and use standard line material. Both felt that a standard spacing was desirable.

C. R. Harte, construction engineer the Connecticut Company, gave an outline of the work which was being undertaken by the American Engineering Standards Committee on galvanizing and sherardizing and assured the members that this work was being considered very carefully.

The report of the committee on power distribution together with recommendations of the standards committee was received and approved by the association.

The report of the committee on power generation was abstracted in part by Chairman C. A. Greenidge, chief engineer, the J. G. White Management Corporation, New York, except the report of sub-committee No. 3, which was presented by L. D. Bale, superintendent substations, Cleveland Railway. An abstract of the report follows:

Power Generation

The first subject dealt with by the committee was recommendations regarding the A.S.M.E. boiler code. Tentative specifications of the A.S.T.M. for lap-welded and seamless steel and lap-welded iron boiler tubes were reviewed.

A second sub-committee reviewed recent progress in the design, application and operation of stokers, grates and furnaces. It is stated that this has been more an extension and refinement of previous developments than the application of any startlingly new principles. Demand has required improvements in the class of workmanship. Simplification and increased ruggedness of design through the entire redesign of some existing types have been found desirable in order better to meet those demands and the increased size of single units now desired.

The sub-committee on auxiliary equipment drive gave a brief comparison of electric and steam-driven auxiliaries. Coal and ash-handling and piping were considered by another sub-committee. The report on these subjects consists principally of a bibliography covering recent technical articles.

The greater part of the report is taken up with a review of current practice in automatic substation design and operation. This subject does not include the economic aspects of the automatic station, but is intended for the purpose of presenting an analysis of good current practices for the guidance of those who are interested in automatic substation operation.

Four general classifications were used in gathering and compiling data, as follows: Urban; steam railroad electrification; heavy duty interurban; suburban or interurban. Questionnaires were forwarded to electric railway systems operating 118 automatic substations. Answers to some forty-three questions were received from companies operating ninety-five automatic stations. These questions cover a wide range of design and operation.

A list of all companies operating automatic substations, together with the rating and type of service, is also included.

The sub-committee in presenting this report, much of which is in the form of tabulated statistics, states that it realizes that there are several very important phases of the subject that should be further investigated and given more prominence than was possible in the preparation of a report of this kind, which was only intended to cover the subject in general. Many of the individual aspects of the matter, which have been covered by the committee in this report, need not receive further consideration by engineering committees, at least until a further advance in the art is noted. There are, however, several questions, principal among which is the matter of ventilation, which should receive immediate attention. The committee recommended that the matter of automatic substation ventilation for plants in all classes of railway service be a subject for consideration by committees during the coming year.

The report was signed by L. D. Bale, W. E. Bryan, H. E. Davis, F. G. Frost, F. C. Hanker, G. H. Kelsay, H. A. Kidder, F. W. Peters, G. W. Saathoff, W. C. Slade, A. E. Stierly, R. L. Weber, G. W. Welsh, E. H. Scofield, sponsor, and C. A. Greenidge, chairman.

W. E. Bryan, superintendent of power United Railways of St. Louis, suggested that the report of sub-committee No. 3, recommending further study on the subject of ventilation, be given careful consideration and be included in the instructions to next year's committee.

The report of the committee on power generation was accepted. The report of the committee on standards, Martin Schreiber, chairman, which was acted upon in detail after the report of each committee during the convention was also accepted as a whole. In general the recommendations were approved, but in a few instances the standards

committee did not agree. The standards which were disapproved by the standards committee follow:

Standards

Power Generation—A proposed definition of "generator output" was submitted for approval. The committee on standards voted that it would approve the definition only in the event that it had the approval of the American Institute of Electrical Engineers and similar organizations concerned with standard definitions of this character. It was further voted that there was no apparent need of this in a Manual section.

Wheel and Rail Contours—The committee passed the following resolution relative to the dimensions for steel wheels, Appendix B of the report:

"If the convention approves the new wheel contours (recommendation No. 1) this will necessarily involve the revision of certain existing tables of wheel dimensions in Manual section Et 7b as well as the revision of Manual sections Et 18a, Sm 3a and Ws 2a. The committee on standards desires at the same time to recommend to the executive committee that consideration be given to the possible expansion of the tables of dimensions (Manual section Et 7b) to permit obtaining standard flanges and treads in the standard diameters shown in Table 1."

Building and Structures—The committee on standards disapproved a recommendation that the report on prepayment and postpayment enclosures, with drawings 16 to 23 inclusive, be published in the Manual as miscellaneous methods and practices.

Way Matters — The committee on standards disapproved a recommendation that the title of Wr 1c be revised to read "plain girder and standard section rails," and suggested that the title read simply, "plain girder rails."

Equipment—Et 9b—Certain revisions to make this specification conform with A. S. T. M. specification, serial designation A-19-21 were referred back to the equipment committee to clarify an apparent conflict between proposed sections 301a and 301b.

Et 14b and Et 15b—Certain revisions were referred back to the committee on equipment for a reconsideration of proposed section 403a dealing with gear bores.

Et 22a—The proposal to omit section 111 dealing with permissible variations, since it is recommended that it be included in Manual section Et 3c, was disapproved, it being believed advisable to have this information in both specifications Et 3c and Et 22a.

B. J. Yungbluth, supervisor purchasing and supplies Philadelphia Rapid Transit Company, presented the report of the committee on purchases and stores which had been read on Wednesday to a session of purchasing agents and storekeepers for approval by the Engineering Association and inclusion in the Manual as recommended practice. This report was approved by the engineering association with the understanding that it would be submitted to the committee on standards for approval.

Purchases and Stores

Two subjects were assigned to this committee: (1) Review the classification of materials recommended in the Accountants-Engineering "joint report on stores accounting" and revise if necessary. (2) Continue the study of uniform method of taking periodical inventory with a view of the adoption of standard forms.

1. *Standard Classification of Materials and Supplies for Electric Railways*—A joint report was made on this subject by the committees on stores accounting and purchases and stores in 1921, but through a misunderstanding it was not formally acted upon by the Engineering Association. This committee, in joint session with the stores accounting committee, gave this matter further consideration and agrees with the conclusions contained in the Accountants-Engineering joint report on stores accounting, 1921, that in view of the vast sums of money tied up in inventories it is necessary to have a classification to provide a uniform and economic method of controlling the investment and to secure the advantages of a logical, physical grouping of materials and supplies for proper ordering, storing, handling, distributing, inventorying and recording. Such a classification has nothing in common with that of operating expense accounts.

It was recommended, however, that a classification of materials and supplies containing seventy-four subdivisions [published with the report of the committee on stores accounting of the Accountants' Association] be substituted for the one recommended in the 1921 report, which contained fifty-nine subdivisions. The former has been in successful use for several years and has met the test of practicability, while the latter has not yet been adopted by any company. The classification with seventy-four subdivisions, it was concluded, was more comprehensive and would more nearly meet the necessities of the larger companies, while smaller companies not requiring such detail may abridge it by making a selection of the classes meeting their requirements or consolidate them.

A monthly statement showing the operation in materials and supplies according to this classification is again urgently recommended. The form submitted in the Accountants-Engineering joint report on stores accounting, 1921, showing the revised classification is sufficiently comprehensive to meet the necessities of any company; although some companies will not require the information in such detail, they can readily consolidate certain columns and eliminate others in accordance with their necessities.

2. *Stock Books*—Before the committee could reasonably consider a method for taking fiscal inventories it was necessary to determine the basic system for stock control. The Accountants-Engineering joint report on stores accounting, 1921, recommended for the control of materials and supplies the stock book system either in lieu of the more customary form of stock card or stock ledger sheet, or in addition thereto and in conjunction therewith.

3. *Fiscal Inventories*—The purchases and stores and stores accounting committees in joint session unanimously approved the following recommendations for taking fiscal inventories of materials and supplies:

1. A general fiscal inventory of materials and supplies as designated by the accounting department for each property shall be taken annually as of one date; the date shall be agreed upon by the accounting department and the stores department.

2. The fiscal inventory shall be taken by the stores department in conjunction with and under the supervision of the accounting department, to assure its being satisfactory for fiscal purposes.

3. The quantities on hand at the time of the annual inventory shall be entered in the stock books in the "On Hand" column for the current month.

4. The form in which the list of material on the inventory will be supplied to the accounting department, and the method of pricing and extending the inventory will depend upon the practice of the various individual companies, as in some cases the accounting is done by the stores department and in others by the accounting department.

4. *Comparative Ratios — Investment in Materials and Supplies on Hand to Gross Earnings* — Realizing that the stock of materials and supplies on hand involves such a large investment, the committee sought to determine a gage by which to measure the performance of the various companies.

The ratio of materials and supplies on hand at the end of the year to gross earnings for the year was taken as a most practicable base for a comparison.

Questionnaires were sent to twenty-four companies for such information for the years 1920, 1921 and 1922; replies were received from thirteen, which show that all companies made successive reductions in the ratio for each year, and that each company maintained about the same relative rank. Taking the year 1922, the four companies having the lowest ratio show an average of 3.08; the second group of four companies showing the next lowest ratio averaged 5.64; the remaining five companies show an average of 7.34; while the ratio of all companies averaged 5.35.

5. *Sessions for Purchasing Agents and Storekeepers*—The committee recommended that such a session be held at the annual conventions.

6. *Subjects for Next Year*—The following subjects are recommended for consideration by the purchases and stores committee for the year 1924:

Method of classification and sale of scrap materials to increase the revenue therefrom.

The proper place for the purchasing and stores departments in the company's organization.

The report was signed by William C. Bell, Jackson P. Dick, J. F. Fleming, Walter N. Ford, C. A. Harris, Harry H. Lloyd, W. S. Stackpole, W. H. Staub, and B. J. Yungbluth, chairman.

Resolutions

C. R. Harte, in the absence of H. H. Norris, read the report of the committee on resolutions, which was accepted. The resolutions follow in part:

"Our officers, through painstaking and untiring effort, have laid the foundation which has made possible the successful outcome of this convention.

"The remarks of President Emmons to the effect that it is the duty of railway men to furnish the transportation facilities that the people need, indicate the wisdom of a farsighted policy in the matter of bus operation. The excellence of the bus exhibits and the evident interest therein have vindicated the policy of encouraging the manufacturers to adapt their equipment to mass transportation needs.

"The reports of committees were distributed well in advance of the meeting, giving opportunity for study prior thereto. This resulted in pointed discussion of the salient features of the reports.

"The sponsor system is to be credited with a considerable share of the success of this meeting, as it has provided a means for the officers to keep in close touch with the progress of committee effort.

"The increasing tendency to cooperate with other associations, particularly along lines of research, is commendable.

"The increasing interest in the standing committee on purchases and stores shows the wisdom of the establishment of this committee under the auspices of the Engineering Association.

"The exhibits have been well worked out with a view to showing the progress which has been made since the last exhibits of two years ago."

The report was signed by R. C. Cram, C. R. Harte and H. H. Norris, chairman.

The committee on nomination submitted the following names for officers and members of the executive committee during the ensuing year and these men were elected by unanimous vote:

President, H. A. Johnson, assistant to the general manager Metropolitan West Side Elevated Railway, Chicago.

First vice-president, C. H. Clark, engineer maintenance of way Cleveland Railway.

Second vice-president, R. C. Cram, engineer surface roadway Brooklyn-Manhattan Transit Corporation.

Third vice-president, Charles R. Harte, construction engineer the Connecticut Company, New Haven, Conn.

Executive committee: Daniel Durie, general superintendent West Penn Railways, Connellsville, Pa.; R. H. Dalgleish, chief engineer Capital Traction Company, Washington, D. C.; E. H. Schofield, engineer power and equipment, Twin City Rapid Transit Company, Minneapolis, Minn.; M. B. Rosevear, superintendent of distribution Public Service Railway, Newark, N. J.

H. H. Adams and Martin Schreiber, past-presidents of the association, were named by retiring President Datz as a committee to escort the newly-elected officers and members of the executive committee for their installation. Before speaking of the newly-elected officers, Mr. Adams called attention to the creditable results accomplished during the past year under the leadership of President Datz. In presenting H. A. Johnson, the new president, he expressed confidence in the latter's ability to carry on the high standard of work set during the last year.

Mr. Johnson, in expressing his appreciation of the honor bestowed upon him by the association, called attention to the necessity for continued cooperation by the entire membership. He then presented the past-president's badge to Mr. Datz.

Each of the officers and members of the executive committee pledged himself to support actively the program for the ensuing year.

Mr. Harte called attention to the importance of closely studying the field for bus operation. No expressed confidence in the ability of the railway to carry on most efficiently mass transportation, but stated that the bus and car should be combined wherever necessary to give the best transportation.

James Dalrymple, general manager Glasgow Corporation Tramways, Glasgow, Scotland, addressed the association, outlining briefly the practice of his company. He also called attention to the serious unemployment situation which now exists in Glasgow.

Retiring President Datz moved a vote of thanks to Secretary J. W. Welsh and Special Engineer Guy C. Hecker for the effective work which they have carried out during the past year. He also moved a vote of thanks to the manufacturers for the splendid exhibits. Both were unanimously adopted.

New Officers of the Claims Association

The officers elected at the session of Oct. 10 to head the Claims Association for the ensuing year are as follows:

President, W. H. Hyland, claim agent Fonda, Johnstown & Gloversville Railroad, Gloversville, N. J.

First vice-president, H. D. Briggs, assistant general claim agent Public Service Railway, Newark, N. J.

Second vice-president, J. H. Handlon, claim agent Market Street Railway, San Francisco, Cal.

Third vice-president, C. B. Proctor, claim agent Memphis Railway and Memphis Power Company.

The executive committee consists of the officers and S. J. Herrell, claim agent Knoxville Power & Light Company; J. S. Kubu, assistant superintendent accident department Cleveland Railway; L. F. Wynne, general claim agent Georgia Railway & Power Company, Atlanta.

Convention secretary, E. L. Lindemuth, claim agent Wilkes-Barre Railway.

Card Parties and Dances Feature the Entertainment Program

AFTER the business of the day was done for the delegates, excellent entertainment was furnished in the evenings. On Sunday a delightful sacred concert was given before a large audience at the Marlborough-Blenheim, and on the following evenings there were dances, a carnival, and a swimming exhibition. During the daytime there were card parties for the ladies and a golf tournament.

Shortly after nine o'clock Monday evening the orchestra on the Pier broke into the strains of the "Star Spangled Banner," and at the conclusion, swung into a lively dance tune for the opening ball. Led by President and Mrs. Emmons, the crowd poured out onto the dance floor and the festivities began. The music was furnished by Paul Whiteman's Orchestra from New York and was much enjoyed by everyone present. At midnight the formal dancing at the Pier ended, but many of the dancers proceeded to the Hotel Traymore, where dancing continued until 2 o'clock.

The carnival on Tuesday evening was a huge success. Due to the careful preparations made by E. F. Wickwire of the Ohio Brass Company, there was something doing every minute. Professional and amateur entertainment was furnished, and in between these features there was general dancing. The regular lighting arrangements on the Pier had been supplanted by special lights installed expressly for the occasion by L. W. Mackall of the Crouse-Hinds Company, making the appearance of the Pier one of rare beauty. Fancy paper hats were furnished the guests as they entered the hall, and together with the gay costumes of the performers in the carnival, lent color to the scene.

More than a hundred of the ladies enjoyed a card party at Haddon Hall on Tuesday afternoon, which was more than double the number that have played at previous conventions. On Wednesday the ladies again played cards, this time at the Traymore.

The golf tournament was held on Sunday at the Northfield Country Club. As told in the CONVENTION DAILY, the attendance was as large as the scores were low.

Altogether, the entertainment committee, by providing amusement for every occasion, earned the thanks of all the delegates attending the convention.

The News of the Industry

I. C. C. Denies Application

Decision Says Western Pacific Seeks Sacramento Northern Lines for System Purposes

The Interstate Commerce Commission handed down a decision recently denying the application of the Western Pacific Railroad, a steam property, to acquire control of the Sacramento Northern Railway and to purchase the bonds of the Sacramento Northern Railroad. A similar application was denied by the commission on May 18, 1922, on the ground that the Sacramento Northern Railway was required to apply to the commission for authority to issue its stock and assume certain obligations and liabilities with respect to the securities of the Sacramento Northern Railroad. After the applicant had applied for a rehearing, which was held on Aug. 24, the case was orally argued before the commission on Dec. 6, 1922. It was the former record, supplemented by additional evidence, which the commission considered before handing down its latest findings. The matter was referred to in the ELECTRIC RAILWAY JOURNAL, issue of Dec. 23, 1922.

The Sacramento Northern lines are now owned and operated by the Sacramento Northern Railroad. It was proposed that this company sell all of its property to the Sacramento Northern Railway, subject to existing indebtedness, including $5,224,373 principal amount of bonds of the old company, payment on which will be assumed by the new. The new company intended to provide itself with funds to complete the purchase, and with an additional amount of working capital, through the issue and sale, at par, of $1,000,000 of its capital stock.

The Western Pacific Railroad took the attitude that the Sacramento Northern Railroad was an interurban electric railway and that the Sacramento Northern Railway would have the same status. It was the plea of that company that neither the railroad nor the railway was subject to the jurisdiction of the commission and that the denial of the application on the part of the commission was wrong.

The commission says that even if it is allowed that the commission is without jurisdiction over corporations organized for the purpose of operating independently as interurban electric railways, the new Sacramento Company does not fall within the "except a street, suburban or interurban electric railway which is not operated as a part of a general steam railroad system of transportation."

The commission says further that there are signs that such operations will be of a broader character than those ordinarily performed by an "interurban electric railway." The Interstate Commerce Commission in its findings then lists seven indications which point to a character of business being conducted by the company more comprehensive than that ordinarily performed by an interurban electric railway.

On the other hand, the Western Pacific Railroad advanced seven arguments to show that the company would be operated as an electric interurban railway. The commission said that there was a basis for the conclusion that the carrier was more than an interurban electric railway if in addition to the business of this character it performed functions which are not commonly interurban functions and, further, was empowered by its charter to engage in transportation generally. The commission says that even if it were able to find that the new company will be operated as a "street, suburban or interurban electric railway," there would still remain the question whether or not it would be operated "as a part of a general steam railroad system of transportation."

The commission could not escape the conclusion that the Sacramento Northern would be operated as part of the Western Pacific system. Further, the commission said that other statements made by the Western Pacific all went to prove that the proposed acquisition was for system purposes, and that the lines, if acquired, would thereafter be operated as part of the Western Pacific System, which is a general steam railroad system of transportation.

For these reasons the commission said that the new company would have to apply to it for authority to issue its stock and assume the proposed obligations with respect to the securities of the old company, and until such application was made, the commission would be unable to pass upon the merits of the proposed acquisition of control. The findings, in the original report, were therefore affirmed.

Time Extended.—An extension of two weeks has been granted by the Supreme Court to the Schenectady Railway in which to file its answering brief in the case instituted by the Public Service Commission in which the commission seeks to collect penalty for alleged violation of an order issued April 7 requiring the company to install increased equipment facilities, following investigation of crippled car service.

Another Co-operative Association in Prospect

At a recent meeting at Baton Rouge of the Louisiana and Mississippi Committee of Public Utilities Information it was decided to organize a state association along the lines of similar co-operative associations in other states. The purpose of the association will be to insure unity of action in all matters of legislation affecting the interests of the Louisiana association and other matters which will make for the advancement and welfare of the state public utilities. W. J. Aicklen, general manager of the Consumers' Light & Power Company of New Orleans, a subsidiary of the New Orleans Public Service, Inc., was elected chairman of the movement.

Personal letters outlining the motives of the proposed association have been addressed by Mr. Aicklen to the several utility corporations of the state. No unfavorable replies have been received so far. When a sufficient number of responses are in hand to warrant it, a meeting of the public utilities interested will be called and formal action taken to place the association on an enduring footing. Articles of incorporation will be filed. Subsequently a similar association will be formed of the public utilities of Mississippi.

Wage Negotiations in Progress in Springfield

Negotiations for a new wage contract are now in progress between the Springfield Street Railway, Springfield, Ohio, and its platform men, the old contract expiring Oct. 1. Both sides express belief that the new contract will be amicably negotiated. The employees are demanding a rate of 46, 48 and 50 cents an hour, the amount depending on the length of service with the company. The present scale is 42, 44 and 46 cents an hour. The company submitted a compromise proposal Oct. 5, offering 44, 46 and 48 cents an hour, retroactive to Oct. 1, but at a meeting of employees held on the same date the offer was rejected, although it was said that representatives of the union conducting the negotiations favored its acceptance.

The first move made by the company after the employees submitted their demands was to throw the company's books open to a committee of workers to show them the present status of the company's finances. It was said to be the result of this examination that the committee recommended acceptance of the company's offer.

No change in working conditions is proposed by either side.

Financial and Corporate

Will Lift Receivership

Plans Being Made for Reorganization of the Birmingham Railway—$1,000,000 for Improvements

Plans are being perfected for lifting the Birmingham Railway, Light & Power Company, Birmingham, Ala., out of receivership and for the reorganization of the company. It is also proposed to spend more than $1,000,000 in the betterment and improvement of the street car service.

Arrangements have been made to take up the company's $4,601,000 of 6 per cent bonds at par and interest. The receivers have just contracted for new cars and other improvements to the amount of $600,000, according to the agreement between the company and the city commissioners, and also hope to spend an additional $100,000 for extensions and betterments.

Lee C. Bradley and J. S. Pevear, co-receivers, filed a petition Oct. 6 in the United States Court in Birmingham for authority to default in the payment of the interest on the 6 per cent bonds due Nov. 1.

SALE WILL INVOLVE NO EXPENSE

At the time of the filing of this petition announcement was made that a committee for the 6 per cent bondholders had been organized and had called for deposit of the bonds on or before Oct. 30. The committee announced that it holds a contract to sell the bonds deposited with the committee on or before May 1, 1924, if the principal of the bonds is due, at a price to yield to those who deposit their bonds the entire principal amount of the bonds and the interest from May 1, 1923, to the date of purchase, provided not less than 60 per cent of the outstanding 6 per cent bonds are deposited with the committee. If this sale is made it will involve no expense upon the depositing bondholders, members of the committee point out.

These bonds may be deposited with the Central Union Trust Company of New York, 80 Broadway, New York City, or with any of its agents, which will issue deposit receipts for all bonds deposited.

The petition of the receivers will be heard Oct. 30, before Judge W. I. Grubb of the United States Court of the northern division of Alabama. The petition filed shows about $1,975,000 of maturing company and receivership obligations due between Sept. 1, 1923, and July 2, 1924; $600,000 contracted to be spent as a direct result of the agreement with the city; $110,000 proposed to be spent in addition, as a result of the city agreement, and about $1,075,000 proposed to be spent during this period for improvements of the property. This shows that approximately $3,650,000 must be spent by the company in order that satisfactory service may be rendered. It is estimated by the receivers of the company that this program carried out through to July 2, 1924, will require almost $1,000,000 more cash than that expected to be available in this period of time.

It is proposed by the receivers to meet this deficiency by default on the 6 per cent bond interest due Nov. 1, 1923, and extension of other obligations, if such extensions can be arranged, but it is pointed out if the deficiency is not met by the extension of other obligations, the receivership might continue indefinitely. It is also stated in the petition that if a default is made and the 6 per cent bonds are made payable in full, they are advised that prompt steps will be taken to reorganize the properties and that the payment of the 6 per cent bonds will make this possible. But such default would in no way affect the company's underlying bonds, which will become due July 2, 1924, or the company's 4½ per cent bonds, of which there are now outstanding in the hands of the public $8,720,000.

The receivers say that in no event should there be a default in the 4½ per cent bonds, as that would require in the reorganization the raising of $8,720,000 cash with which to pay these bonds off in full, and probably cause the payment of a much higher rate of interest on the 4½ per cent bonds in the future.

It is believed that the company will be reorganized without delay, as details of the plans of reorganization are now being worked out.

Will Determine Fare in Duluth

In the Duluth fare case recently completed in the United States District Court of Minnesota, A. L. Drum of A. L. Drum & Company, consulting and constructing engineers of Chicago and Philadelphia, testified before Hon. Thomas D. O'Brien, special master, on the value of the property of the Duluth division of the Duluth Street Railway in a hearing at Duluth.

Mr. Drum presented valuations of the property as of July 1, 1921. He summarized the physical property, including power contract, as follows: Present-day cost, prices current June, 1921, $8,599,526; ten-year average cost, average prices 1912-1921, $6,853,120; pre-war cost, prices current year 1915, $5,207,626; estimated original cost, prices current date of installation, $5,206,267.

In addition Mr. Drum submitted a report on the developmental costs to the company, which amounted to $1,129,826, based on estimated original cost, which represents the costs that have been, or would be, encountered in creating and developing the property to its present state of efficiency. Taking these costs into consideration and the present condition of the property, Mr. Drum testified that the going concern value of the Duluth division was at least $800,000. Considerable additional testimony was heard as to operating costs, increased service, schedules, etc.

As a result of this hearing the rate of fare to be established in the city of Duluth and the value of the property of the company will be determined.

Discontinuance of Northern Massachusetts Property to Be Discussed

Patrons and stockholders of the Northern Massachusetts Street Railway in the territory served by the Gardner, Westminster & Fitchburg division are interested in the announcement of the Gardner Chamber of Commerce that bondholders of the road are threatening to foreclose. The Chamber of Commerce has called a special meeting to discuss the subject.

In a bulletin which the Gardner chamber has issued it is noted that I. M. Garfield, of the law firm of Garfield, Whiteside & Lamson of Boston, presents what is termed "the only concrete suggestion which comes from official source."

The letter from the attorneys representing the railway bondholders points clearly and specifically to the junking of the line unless local interests help in the crisis. It is said that if Gardner men and the citizens of the other towns which the road serves would agree to assistance there is likelihood that a reorganization of the Gardner, Westminster & Fitchburg branch would be arranged, thus permitting its continuance.

The bonds of this division can be bought at a reasonable figure, the letter says.

Gardner people have not warmed up to the suggestion and Mayor Chester P. Pearson of that city has expressed the opinion he is satisfied to have the line junked if it be the wish of those interested in the property.

"Ten years ago if the railway had been discontinued it would have been somewhat of a calamity but now Gardner's roads would be much better if the rails of the company were taken up," Mayor Pearson said.

The Mayor says he feels if the bondholders foreclose and some other interests take over the line a portion of the road could be run at a profit. The Mayor's suggestion is that a line from the Greenwood shop in South Gardner to Templeton could be run to the advantage of many patrons.

However, there are members of the Gardner City Council who feel discontinuance of the railway would be the loss of a modern and indispensable facility.

Templeton residents are disturbed at

the possibility of the discontinuance for it would leave them without access to Gardner or other nearby places.

Some time ago in answer to a letter from Receiver W. P. Abercrombie of the railway the Gardner City Council expressed a willingness to consider a plan designed by that official for the operation of motor buses in the section, but nothing has come of this. There has been no action on the suggestion also made some time ago by attorneys for the bondholders for consideration by the City Council of a proposed plan for reorganization.

Receiver Refused for Dayton, Springfield & Xenia Southern

Motor bus competition during last year was responsible for the failure of the Dayton, Springfield & Xenia Southern Railway, Dayton, Ohio, to pay the interest on $396,000 in bonds during the last six months. United States District Judge Smith Hickenlooper was informed of this condition by Province M. Fogue and Judge Harry M. Hoffheimer, attorneys representing the company, when Frank Dinsmore and Judge Walter Shohl, Cincinnati, representing the First Wisconsin Trust Company, Milwaukee, trustee of the mortgage under which the bonds are secured, sought the appointment of A. H. Effner, former general manager of the Cincinnati, Georgetown & Portsmouth Railway as receiver of the lines and properties of the Dayton, Springfield & Xenia company.

Judge Hickenlooper, after hearing the arguments of counsel on both sides on the motion of the Wisconsin company for appointment of a receiver to take charge of the company, declined to make an appointment at this time and intimated that in his opinion the appointment of a receiver would not be to the best interest of the parties concerned. The court intimated also that from the evidence it had gathered there is a family controversy involved in this case and that unless it is shown that the company is insolvent it will not be disposed to grant the motion for a receiver.

The bill of complaint of the Wisconsin Trust Company was filed in the Dayton Federal court, Oct. 2. In the bill, it is said, it was alleged that the defendant company had defaulted interest due on outstanding bonds of a bond issue of $500,000 secured by mortgage to the Wisconsin company and that to protect the interests of bondholders the mortgage should be ordered foreclosed and a receiver appointed forthwith to take charge of the properties of the defendant company.

It was on the motion for the appointment of the receiver that the case came for hearing before Judge Hickenlooper, Oct. 6. The company, through its counsel contended that if a receiver were appointed it should be T. A. Ferneding of Dayton, vice-president and general manager of the company, whose administration of the defendant company's affairs had been all that could be expected, it was stated. It was declared that Mr. Ferneding is one of the principal owners of the bonds secured by mortgage to the complainant trust company and that his record as general manager has been such as would entitle him to the full confidence of the court in the event the court should see fit to appoint a receiver.

In his statement to the court showing the loss of revenue of the defendant company through motor bus competition, Attorney Pogue stated that the company lost 71,000 passengers last year. Mr. Pogue declared emphatically that the company is not insolvent and that there is no reason for the appointment of a receiver at this time.

Indications Point to Insufficient Return in New Orleans

R. S. Hecht, chairman of the board of directors of the New Orleans Public Service, Inc., in making announcement that the books of the company for the last quarter of 1923 had just been closed, declared that, in the absence of detailed figures, the indications seemed to be that the earnings of the company have been insufficient to make a rate of return of 7½ per cent on the allowed valuation under the company's reorganization agreement, though the earnings justify the rate of return on the company's bonded indebtedness of $42,000,000.

Mr. Hecht does not anticipate that the company will make application for higher rates because of its failure to carry out successfully its compromise agreement; on the contrary, he is of opinion that when the public utilities have been thoroughly rehabiliated, which they were not during the best part of the trial year, the rate return of 7½ per cent will yet be earned on an even lower scale of rates for gas and car fares.

Large sums had to be raised to bring the public utilities to the desired standard of efficiency, so that their affairs could be economically administered; but with a new power unit recently installed and a large addition of street cars, of greater seating capacity, all of which were lacking when the trial test was started, a further test under present rates may be advisable, to learn definitely whether greater operating economies will not make it possible to earn the 7½ per cent return. The detailed figures will not be available for two or three weeks, Mr. Hecht said, when it is purposed to go over the entire year's operation with Commissioner Paul H. Maloney of the Department of Public Utilities.

Auction Sales in New York.—At the public auction rooms in New York on Oct. 10 there were sold fifty shares of West Virginia Traction & Electric Company preferred, $50 lot, and three shares of Toledo Traction, Light & Power Company 6 per cent cumulative preferred, $82 per share.

Foreclosure Suits Filed

Mortgage Bonds of $30,000,000 Matured Oct. 1—Interest Centers on United Railways' Suburban Properties

The first of two threatened suits to foreclose on property of the United Railways, St. Louis, was filed in the United States District Court in St. Louis on Oct. 2 in behalf of a Colorado holder of $4,000 of the general mortgage 4 per cent bonds of the company which fell due Oct. 1.

The action was brought by Ephraim Caplan, who filed the original suits for the receivership against the company several years ago. The suit names the United Railways and Rolla Wells, receiver, as defendants, as well as the St. Louis Union Trust Company, trustee under the mortgage securing the bonds. The total general mortgage bonds maturing Oct. 1 was $30,000,000. They were issued in September, 1899.

Foreclosure on the property of the St. Louis & Suburban Railway part of the United Railways system is planned by Samuel B. Jeffries, representing a committee of the bondholders. This action was decided upon some time ago. On Sept. 29 the Suburban bondholders were successful in their efforts to have Federal District Judge Faris deny the application of Receiver Rolla Wells for permission to extend the time for payment of the three underlying bond issues aggregating $4,100,000 due on Oct. 1.

The foreclosure suit contemplated by Mr. Jeffries would bring about the sale of the Suburban property and a separation of the merged systems. There are $4,500,000 general mortgage suburban bonds outstanding. These bonds expired on April 1 but the time for payment was extended to Oct. 1. Demand for payment on that date was made on Receiver Rolla Wells several days ago.

Outside Interests Want Suburban Control

Powerful outside interests are said to be anxious to get control of the Suburban property, which includes the Hodiamont, Sarah, Union, Manchester and the Kirkwood-Ferguson lines. In this connection the Studebaker-McKinley interests have been mentioned. It is said that should this group take over the Suburban lines they would be merged with the McKinley Traction System, which now enters St. Louis, and form the nucleus for a St. Louis-Kansas City interurban line. This system would also have connections with Danville, Peoria, Springfield and other important points in Illinois, and possibly within a very short time a line into Chicago.

Part of the plans for a reorganization of the Suburban is an elevated system along the right-of-way of the Hodiamont line, which has a private right-of-way between Vandeventer and Morgan streets and the old Suburban Garden in Wellston. This would give St. Louis rapid transit, something for which the city is sadly in need.

Traffic and Transportation

Birmingham Railway Starts Bus Operation

As a result of the abolishment of the jitneys in Birmingham, Ala., the Birmingham Railway, Light & Power Company is planning the installation of a number of motor bus lines to run to sections of the city not reached by the street cars at the present time.

One of these bus lines went into service Oct. 6 and is being operated successfully from Birmingham to Tiddlesville, a suburb lying several miles out. Another line will be established soon operating from the city of Birmingham to the suburb of Milner Heights.

Permits for the operation of these bus lines were issued by the city commissioners of Birmingham, Oct. 6. Under a new city ordinance each one of the buses operated by the company is required to make a bond of $10,000. Bonds for the two bus lines named are already made. Arrangements are made on these bus lines for the separate accommodation of both whites and negroes.

All bus lines established by the company will connect with car lines of the company, and transfers will be issued for both the cars and the buses for the additional sum of 2 cents, the same as is charged for a transfer from one car line to another.

Dispute Over Terminal Site

The permit of the Orleans-Kenner line to use North Rampart Street between Canal and Tulane Avenue as a terminal having long since expired, the Commission Council of New Orleans, upon completion of the reorganization of the New Orleans Railway & Light Company, served notice upon the company that it would have to vacate the street that it had been using without authority as a terminal. This is one of the most heavily congested thoroughfares in the city. It is traversed by several electric railway lines and on it is located the present terminus of the Spanish Fort Railway, which operates between the city and summer resorts along Lake Pontchartrain.

The Commission Council selected a site for the Orleans-Kenner line on Howard Street. This arrangement brought on a storm of protest from the people of Jefferson Parish, the other terminal of the road, as well as objection from the members of the police jury of the parish. The site selected was objected to on the grounds that it was too far away from the shopping district and would work a hardship upon the people of Jefferson Parish, contiguous to New Orleans, who made most of their purchases in this city. At a conference held recently with Commissioners Maloney and Ray of the Departments of Public Utilities and Public Safety and representatives of the Orleans-Kenner road, the New Orleans Public Service, Inc., and the police jury of Jefferson Parish, a site on South Liberty Street between Tulane Avenue and Canal Street, only a short distance away from its present terminal, was tentatively agreed to by all parties to the conference and the incident was presumed to be closed.

It now develops that the residents of South Liberty Street, at the point selected for the new terminus of the Orleans-Kenner Railway, object to the agreement reached and have suggested in its stead that the terminal be placed in the rear of the Elks' Home. It is barely possible that the Orleans-Kenner Railway may be compelled to stop operation at the Orleans Parish boundary line and issue transfers good from that point into New Orleans over the lines of the Public Service, Inc.

The South Liberty Street protestants will be heard by the Commission Council.

Freight Service at Night North from Indianapolis

Improved interurban freight service in northern Indiana territory has been arranged by the Union Traction Company of Indiana. The new service will enable Indianapolis wholesalers and business firms to compete more advantageously with Chicago firms. H. A. Nicholl, general manager of the railway, has notified John B. Reynolds, general secretary of the Chamber of Commerce, that a new freight car, the "Cannon Ball Freight," will leave Indianapolis every night at 11 o'clock, arriving in South Bend, Ind., the next morning at 8 o'clock.

The new freight schedule will enable Indianapolis wholesalers to receive and load shipments the same day and deliver goods in South Bend and Chicago territory the next morning. This will give the local dealers a decided advantage over Chicago shippers, it is pointed out.

Efforts have been made to obtain improved interurban freight facilities to the territory about South Bend.

Temporary Permits No Longer Good.—The New Jersey Public Utility Commission issued an order on Oct. 5 directing all buses operating parallel to trolley lines on temporary permits issued by municipalities to withdraw at once. If any drivers disobey the order, the commission will request William L. Dill, Motor Vehicle Commissioner, to revoke their operators' and registration licenses. This action came after a hearing at the headquarters in Newark of the utilities body. Harry V. Osborne, president of the board, announced that Commissioner Dill had agreed to cooperate in carrying out the order.

Court Approves Jitneys in Columbia

"Jitney" drivers in Columbia, S. C., have scored two victories in the courts during the past few days, and as a consequence the competition which the Columbia Railway, Gas & Electric Company is meeting with will likely be redoubled. Recently the South Carolina Supreme Court held that the city ordinance prohibiting the operation of motor vehicles for hire on certain sections of Main Street, save under restricted conditions, was null and void. The ordinance, the court interprets, is an attempt to legislate the "jitneys" out of existence. The case originated in the City Recorder's Court, where a jitney driver was tried and convicted of violating the ordinance. The case was then appealed to an associate justice of the Supreme Court, who decided that the ordinance was null and void.

The other victory for the jitney drivers was won in the Court of Common Pleas. At a recent session of the Legislature the South Carolina Railroad Commission was given authority to supervise and regulate the operation of "public" utilities. Under this clause the railroad commission undertook to regulate the operation of motor vehicles for hire, and for the protection of passengers required the vehicles to be bonded. Some drivers arranged for the bond and others continued to operate without the bond. The commission then sought an injunction requiring the drivers to show cause why they should not be enjoined from further operating the jitneys until they had complied with the requirements. The case was argued and the judge refused the petition for an injunction, holding that "public utilities" were limited to concerns furnishing gas, electricity, heat, etc. This case, however, will be taken to the Supreme Court.

Changes in Night Service on Boston Elevated

All night service into the Tremont Street subway in Boston will be instituted Oct. 14, it has been announced by the Boston Elevated. Night car service now operated to Adams Square will run into Tremont Street. Cars will run on present schedules, using the subway instead of surface lines. Shuttle service will be operated in the Tremont Street subway connecting the lines which run to Park Street with those that run to Brattle Street. Transfer privileges will remain as at present. The keeping open of the Tremont Street subway through the night is only one of the several requests for changes in the night service that could be granted. The continuance of the 5-cent fare service from 12 a.m. to 5 a.m., the Elevated officials say, is out of the question, owing to the light traffic and consequent lengthening of routes during that period. The officials also state that a 5-cent service over one line for the benefit of a special class of patrons would constitute unjust discrimination.

Interurban's Interstate Rates Not Unreasonable

Rates on commodities in carloads from local stations on the line of the Boise Valley Traction Company, Idaho, to interstate destinations, have been found by the Interstate Commerce Commission not to be unreasonable or unduly prejudicial.

The rates were attacked by shippers on the ground that they are unduly prejudicial to the local points on the traction line. The commodity rates are made by a combination of the traction line's local rates to the junction point and the steam carriers' rates beyond. The electric line, including branches and side track, is 80 miles in length. It extends from Boise along the north bank of the Boise River to Middleton. There it connects with the Oregon Short Line Railroad's Idaho Northern branch. It then crosses the river and connects with the main line of the Oregon Short Line at Meridian. The traction line owns little freight equipment. It interchanges only three of its box cars with the Short Line and those are used in switching service only. It depends upon the Short Line for equipment used in interstate shipments.

In its decision in the case, the commission, among other things, says:

> The financial condition of the traction line is unfavorable. During 1921 it failed to earn operating expenses and interest on its funded debt by more than $54,000. Its general manager testified that its rates were established on a low basis due to the fact that the blanket rates did not apply to or from points local to its line.

Commissioner Campbell, in a dissenting opinion, holds that the shippers on the electric line are being subjected to prejudice because the Short Line fails to grant them the same rates as are granted to shippers on other short and branch lines. He said:

> The situation disclosed by the record in this case indicates that the complaining shippers are laboring under a great disadvantage and I cannot sanction the action of the majority in depriving the shippers of the relief they seek and to which I believe they are entitled.

James F. Hamilton a Model for Employees

The successful career of James F. Hamilton, who in twenty-one years rose from conductor to the presidency of the New York State Railways, is cited in a message to the platform men of the Rochester lines of the system by Charles R. Barnes, City Commissioner of Railways, in a recent issue of the employees' magazine. In this message the commissioner points to the rapid climb of the railway executive as an example. That courtesy is an important factor in success in the traction field is stressed by Mr. Barnes.

His appeal says in part:

> You are engaged in a legitimate occupation. Your uniform should be as highly respected as any other in the city. It is up to you men to maintain such a condition. This can be done by furnishing proper service to the people, which, as far as you are concerned, consists in polite and courteous treatment—in so far as possible, having your trains on time, stopping to receive and discharge passengers, when or where as provided for by the rules, keeping your cars neat and tidy, and paying special attention to your personal appearance.
>
> Presidents of railway companies are not born; they are made. The president of your company is an illustration of that statement. He rose to his present position by strict attention to his business along the lines I have suggested.

Bus Franchise Deferred

Efforts of E. W. Hicks of Worcester, Mass., to establish a jitney service between Clinton and Sterling and Clinton to Worcester were unavailing when the Clinton Selectmen put off granting a franchise. Opposition to the establishment of the lines had previously developed from the Chamber of Commerce of the town, although it was not shown when the Selectmen considered the matter. It is said the chamber is not opposed to the Sterling and Clinton line, but has objections to any line that would compete with the Worcester Consolidated Street Railway between Clinton and Worcester. The Clinton Selectmen have not entirely discouraged any attempt by Mr. Hicks to get the franchise for they have notified him their action is simply held in abeyance to give any person or persons who cares to enter objection a chance to do so. Mr. Hicks has informed the Selectmen he has no intention of competing with the trolley lines. He is desirous of getting the Sterling to Clinton route approved, he says, to enable him to connect with the line he now operates between Worcester and Holden and Jefferson.

Authorizes Abandonment, Then Gives Bus Permit

The Public Service Commission has granted the request of the Elmira Water, Light & Railroad Company, Elmira, N. Y., to abandon a portion of its trolley line operating from Elmira to Horseheads and Watkins, on the ground that the line has not paid operating expenses for some years. At the same time the commission granted a certificate for the operation of a bus line as a substitute to supply the needed transportation facilities. The order permitting the abandonment provides that the company shall do so at its own expense and that during the time that the tracks remain, the company shall, at its own expense, keep in good repair that portion of the highways and paved streets that are now required to be kept in repair under the present statute.

The bus certificate is issued to Mr. Marshall and provides that "no local passengers shall be carried from one point to another on that part of the route between the terminal of the city of Elmira and the northerly boundary of the village of Horseheads." He is further directed to bring all buses to a dead stop when approaching railroad crossings, if any exist, and to exercise care in crossing the tracks. He is not to sell his certificate without the approval of the commission. Residents of the communities interested urged the granting of the certificate to Mr. Marshall in the event of the discontinuance of service by the trolley line.

No Reduction in Fare in Quincy

Charles G. Wadleigh, chairman of the public trustees of the Eastern Massachusetts Street Railway, has replied in the negative to the petition of Mayor Bates of Quincy that a 5-cent fare be established from the outlying sections of the city and a 3-cent additional charge for a transfer. The present rate is a 10-cent fare from all points at the edge of the city to the center, although the company sells a sixteen ride ticket for $1.

The petition presented by Mayor Bates was the result of an effort made by the workmen of the Fore River Shipbuilding Corporation, who claimed they were paying 40 cents a day to get to and from work, while still living in the precincts of the city of Quincy.

In answering Mayor Bates' request, Mr. Wadleigh said:

> In 1919 and 1920 the Quincy district failed by very large amounts to earn the cost of service. Up to about the middle of 1920, the non-profitable lines of Hingham and Weymouth were included in the Quincy district, but at that time they were set apart as separate districts, and Quincy relieved of the burden. Since 1920 the Quincy district has been fortunate in having but little burden from lines outside the city.
>
> In 1921 the district failed to earn the cost of service by $15,713. In 1922 it earned the cost of service by the narrow margin of $4,621. For the first seven months of 1923 the cost of service has been earned with a margin of only $1,799.
>
> In 1920 there was a 10-cent cash fare in Quincy, with a ticket rate of 8½ cents. Since that time the ticket rate has been lowered three times, as operating results warranted, until now the rate is 6¼ cents per ride. The last reduction in fare to the present rate was made only a little over four months ago, and, as is usual on every reduction in rate, has resulted in a reduction in earnings.
>
> It has been possible to keep the present ticket rate only by practicing the utmost economy and efficiency in operation.
>
> As you are undoubtedly aware, an arbitration board has just recently awarded the carmen in Quincy a substantial increase in wages, which is retroactive to May 2 of this year. This is an additional expense which must be met out of car fares, and it has been a serious question in our minds whether we would not be compelled to increase fares in order to get sufficient funds to pay it. We intend to make every effort to meet it without increasing fares.

Allows One-Man Cars for Interurban Service

The Railroad Commission has authorized one-man interurban service by the Eastern Wisconsin Electric Company on its Fond du Lac, Oshkosh, Neenah and Menasha interurban division. The commission in its decision allowing the company this service examined the financial figures, which showed that for the first six months of the year 1923 there was available from earnings for depreciation and return on investment for the electric railway system an amount equaling only 2.26 per cent of the value of the railway property used and useful for the public. In view of the competition to which the company is subjected by reason of steam railroad and motor bus transportation, it is doubtful if an increase in rates would result in a material increase in revenue. The commission believed that all economies in operation consistent with public safety and convenience should be adopted by the company.

Personal Items

Thomas V. Campbell Appointed Maintenance Superintendent

Thomas V. Campbell has been appointed superintendent of maintenance of the New York & Queens County Railway, Long Island City, N. Y., and started on his new duties Sept. 17.

Mr. Campbell began his railroading career in 1898 with the old Metropolitan Street Railway of New York and was with it for ten years, serving in various capacities from dynamo wiper to shop foreman. In 1908 he took charge of the equipment of the Yonkers Railroad. In 1911 he was appointed shop foreman of the New York City Interborough Railroad, which later became part of the Third Avenue Railway system. His next position was as shop foreman of the Smith Street division of the Coney Island & Brooklyn Railroad, which position he held until February, 1914, when he went with the Public Service Railway of New Jersey, remaining there three years and leaving to accept a position with the Submarine Boat Corporation in charge of the electrical installation on vessels that company was turning out during the war period. In March, 1921, Mr. Campbell became master mechanic of the Jersey Central Traction Company at Keyport, N. J.

Mr. Campbell's duties in his new position with the New York & Queens County Railway include the maintenance of the transmission and distribution system, as well as rolling stock and buildings.

George S. Brush with Motor Company

George S. Brush, for the last five years superintendent of transportation of the Houston Electric Company, has resigned to go to New York, where it is announced that he will become associated with a company manufacturing trucks.

Mr. Brush has been a prominent figure in the railway field since 1908, when he entered the employ of the Boston Elevated Railway in the transportation bureau. During vacation time, prior to this, he was employed by the Middlesex & Boston Street Railway, at Newtonville. Here he did original work in the direction of publicity for traffic stimulation. From the transportation bureau of the Boston Elevated, he was transferred to the president's office, later to the claims department, and in 1910 was appointed chief clerk of Division 6, with headquarters at Sullivan Square terminal, Charlestown. He later became chief clerk of Division 8, which comprised the entire business section of Boston and included all surface cars, subways and tunnels.

In December, 1915, Mr. Brush was appointed superintendent of the railway department of the Cumberland County Power & Light Company, in Portland. He left that position early in 1918 to become superintendent of transportation of the Springfield Street Railway, Springfield, Mass., succeeding F. V. Fabian. In the fall of 1918, Mr. Brush tendered his resignation as superintendent at Springfield and accepted the position of superintendent of the Houston company, a Stone & Webster property.

Mr. Brush was born in Stillwater, Minn., in 1884. He was educated at the Massachusetts Institute of Technology, taking the course in mechanical engineering. While he was engaged at Portland with the Cumberland County property, he was regarded as one of the best younger operating executives in New England electric railway circles.

Another Promotion for I. W. Pettengill

I. W. Pettengill, who recently was made secretary and general manager of the Cincinnati, Milford & Blanchester Traction Company, which promotion was referred to in the ELECTRIC RAILWAY JOURNAL, issue of Sept. 15, has been elevated to the presidency of the interurban company. He succeeds J. P. Peurrung, who resigned after ten years service to engage in the match manufacturing business in Cincinnati. Before his affiliation with the interurban company, Mr. Pettengill was electrical engineer for the Cincinnati Screw Company, Loveland, Ohio.

Henry Kroger, a son of B. H. Kroger, owner of the Cincinnati, Milford & Blanchester Traction Company, has been made secretary and treasurer, while Chester Kroger, another son, has been made assistant secretary and treasurer. Under the previous arrangement Henry Kroger was treasurer and Chester a director of the interurban company. As president, Mr. Pettengill will be in active charge of operations.

H. D. Cowles Chief Inspector

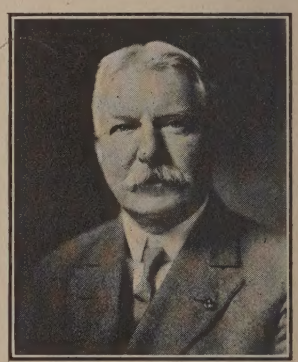
E. M. Walker, president of the Schenectady Railway, has announced the appointment of H. D. Cowles, an electric railway man of twenty-three years' experience, to the new post of chief inspector. In future, all inspectors and motorman instructors will report to Mr. Cowles, who will have an office in the waiting room in State Street, Schenectady. Mr. Cowles has been associated with the company in Schenectady for the past four months.

From 1901 to 1907 he was a motorman on the Hudson Valley lines. For the next ten years he served the same company as train dispatcher and inspector. For three years beginning in 1917 he was assistant superintendent in Youngstown and since then has been with the New York State Railways in Rochester as chief inspector and then with the United Traction Company in Albany.

Ralph Peters Dead

Was One of the Biggest Figures in American Railroading—Transformed L. I. R.R. Into Great Trunk Line

The man who changed a summer excursion line to one of the greatest passenger railroads in the United States died suddenly on Oct. 9 at his home in Garden City. He was Ralph Peters, president of the Long Island Railroad for eighteen years. On Nov. 19 next, his seventieth birthday, he would have completed fifty years in the railroad business. The romance of railroading was probably born in him, as his father, Richard Peters, was one of



Ralph Peters

the pioneer railroad builders of the South.

Ralph was born in Atlanta, Ga., and after graduation from the University of Georgia entered the employ of the Atlanta Street Railways, serving in the capacity of superintendent and purchasing agent for two years. Later he went to the Pennsylvania Railroad. From 1901 to 1905 he was general superintendent of the Southwest System of the Pennsylvania Lines West of Pittsburgh, with office at Columbus, Ohio. When in April, 1905, a vacancy occurred in the position of president and general manager of the Long Island he was selected for that office. Since that date he had been at the head of the Long Island System, as president and chief operating officer of the Long Island Railroad, New York & Rockaway Beach Railway, New York, Brooklyn & Manhattan Beach Railway, Montauk Steamboat Company, Ltd., and eighteen other subsidiary lines.

When the government took over the control of the railroads in 1918 Mr. Peters was selected as Federal manager of the Long Island System. He accepted the post and was relieved of his duties as president of the corporation until March 1, 1920, when the railroads were returned to their owners.

The growth of the Long Island Rail-

road is a monument to the untiring energy and extraordinary perseverance of Mr. Peters, who converted this line from an excursion line to one of the greatest trunk line railroads in the country.

One of Mr. Peters' greatest achievements was in the matter of electrification. Electric train service was started in 1905 between Flatbush Avenue terminal, Brooklyn, and Rockaway Park. Since that date electrification has been extended until now there are 227.2 miles of electrified track in operation on the Long Island System.

In 1905 the system carried 18,000,000 passengers and 2,745,000 tons of freight. In 1922 the road carried 79,656,891 passengers, while freight to the amount of 6,027,860 tons was hauled. More than $50,000,000 has been invested in improvements and equipment on the road since Mr. Peters assumed the presidency.

During his eighteen years as head of the Long Island he has done more than any single man or organization to promote and develop the agricultural resources of Long Island and was instrumental in bringing about the cultivation of tens of thousands of acres of hitherto idle and non-producing land on the island.

His was a policy of expansion and development. Although he lived to see many of his dreams of reconstruction and transformation come true, he still had a vision of the time when all the branches of the system would be electrified, and a four-track line from one end of the island to the other, and when Montauk Point, at the extreme eastern end of Long Island, would be a monumental port of entry for transatlantic steamers.

Although a busy executive in the railroad field, Mr. Peters cultivated other interests also. He was a member of the Society of the Sons of the Revolution and of the Colonial Wars Society and held membership in the Union League Club of New York and the Cherry Valley Golf Club of Garden City. He is survived by his wife, a son, Ralph, Jr., who is superintendent of transportation of the railroad, five daughters, a brother and a sister.

Lewis R. Schenck

Lewis R. Schenck, president of the Toledo & Indiana Railroad, Toledo, Ohio, died suddenly on Oct. 4 at his home in Toledo. For many years Mr. Schenck was connected with the J. G. White Engineering Company in New York City. When his father, S. C. Schenck, died he returned to Toledo and took up the management of the S. C. Schenck Coal Company and following the death of his brother he was elected head of the Toledo & Indiana line of which his father and brother had been president in turn. Mr. Schenck was born in Toledo, July 29, 1880. After he was graduated from the public schools he attended St. Paul Preparatory School in Concord, N. H., and later entered Yale from which university he was graduated in 1904.

Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

59,008 Surplus Cars on Sept. 22

The railroads of the country on Sept. 22 had 59,008 surplus freight cars in good repair and immediately available for service. This statement is in accord with reports filed by the carriers with the Car Service Division. On the same date the reported car shortage for the country as a whole was 13,515 cars. Compared with Sept. 14, the number of surplus freight cars on Sept. 22 represented a reduction of 10,072, while there was an increase of only 270 cars in the reported car shortage in the same period. The railroads reported on Sept. 15 that they had fewer freight cars in need of repair than at any time since may 15, 1920. The number in need of repair on Sept. 15 totaled 165,284, which represented a decrease of 10,043, compared with the number in need of repair on Sept. 1, at which time there were 175,327.

Anaconda Buys National Conduit & Cable Hastings Plant

The American Brass Company, an Anaconda Copper subsidiary, has purchased at receiver's sale the plant of the National Conduit & Cable Company for $3,000,000. Confirmation of this sale was made Oct. 4. The purchase price is the amount of bond issues standing against the property of National Conduit & Cable at Hastings-on-Hudson, N. Y., the bulk of which was bought up some time ago by Anaconda.

The rod and wire mill at Hastings, which is the property purchased, has a capacity of 10,000,000 lb. per month and is in good condition, requiring only minor changes to make it efficient.

This new purchase by the Anaconda organization fortifies those wire mills so located as to cater economically not only to domestic but to world demand. The Hastings plant is particularly well adapted to the exporting of copper rods and electric wires to continental Europe.

Second Power Show Scheduled

The 1923 Exposition of Power and Mechanical Engineering will be held in the Grand Central Palace, New York City, Dec. 3 to Dec. 8. The number, diversity and interest of the exhibits of the second exposition promise to excel those of the first exposition held in December, 1922. The exhibits will be supplemented by an extensive program of moving picture films to be presented in co-operation with manufacturers. Last year the picture program was found to interest the layman who was not informed about technical processes and the engineer whose close application to one field of his work had not enabled him to keep up with progress in the rest of the profession.

About two hundred exhibitors have signed contracts for space.

Chilean Railways to Obtain Block Signaling Materials from Union Switch

The electrification of the Chilean State Railways from Valparaiso, on the Pacific Ocean, to Santiago, the capital, located in the foothills of the Andes Mountains, is the most extensive trunk line electrification yet undertaken in South America. This railway, part of which is single and part double track, connects the metropolis of the west coast of South America with its most important seaport, traversing a mountain range having an elevation of 2,500 ft. The first regular electrically operated train was run over a portion of the line in July. It is anticipated that the installation will be completed and all trains electrically operated by Jan. 1.

Contract has been awarded the Union Switch & Signal Company for 515 Style R color light signals, 1,189 alternating-current relays, impedance bonds, check-locking circuit controllers, track and line transformers, pot signals, instrument housings, etc., for complete track circuit signaling between Valparaiso and Santiago, where the signals are semi-automatically controlled, and for the signaling of the Los Andes branch, where the control is manual. Check-locking using Union Switch Electrically locked circuit controllers, including complete track circuit control, will be installed on the single-track portion of the main line.

The construction work will be handled by the railway company's forces under the supervision of W. J. Evans, chief of the department of signals, telegraph and telephone, and P. Godoy, his assistant.

Metal, Coal and Material Prices

Metals—New York	Oct. 9, 1923
Copper, electrolytic, cents per lb.	13.00
Copper wire base, cents per lb.	15.25
Lead, cents per lb.	6.85
Zinc, cents per lb.	6.61
Tin, Straits, cents per lb.	42.25
Bituminous Coal, f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$4.825
Somerset mine run, Boston, net tons	2.375
Pittsburgh mine run, Pittsburgh, net tons	1.875
Franklin, Ill., screenings, Chicago, net tons	1.25
Central, Ill., screenings, Chicago, net tons	.70
Kansas screenings, Kansas City, net tons	2.25
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft.	$6.60
Weatherproof wire base, N. Y., cents per lb.	18.00
Cement, Chicago net prices, without bags	$2.20
Linseed oil (5-bbl. lots), N. Y., per gal.	$0.98
White lead, in oil (100-lb. keg), N. Y., cents per lb.	11.375
Turpentine, (bbl. lots), N. Y., per gal.	$1.04

Rolling Stock

Jacksonville Traction Company, expects to buy four cars for use in South Jacksonville.

Kitchener & Waterloo Street Railway, Kitchener, Ont., it is reported, will soon be in the market for several new street cars.

Knoxville Power & Light Company has placed an order with the Cincinnati Car Company for fourteen cars of the most modern type. The order specifies seven single-truck cars and seven double-truck cars. The cars will cost $134,000 and first deliveries have been promised for February, 1924. The reported purchase was referred to in the ELECTRIC RAILWAY JOURNAL of Sept. 22.

Track and Line

Frankford, Holmesburg and Tacony Railway, Philadelphia, during the present year has constructed and equipped with new rails 2 miles of road and it is proposed to construct 2 miles more next year and another 2 miles in 1925.

Princeton Power Company, Princeton, W. Va., will extend the west end line in Graham to Maple Hill Cemetery and Shelby Heights and the loop line to the fair grounds and Bluefield College.

Conestoga Traction Company, Lancaster, Pa., is building a new section to the Ephrata-Lancaster line which will pass through Talmage, Brownstown and Akron. Construction is expected to be completed by Nov. 1.

Asheville Power & Light Company, Asheville, N. C., is arranging for improvements to relieve congestion in the Pack Square district. A loop system of tracks will be laid and new equipment added. The improvements will cost about $200,000, C. S. Walters, vice-president and general manager, announces.

Power Houses, Shops and Buildings

Illinois Power & Light Corporation, Chicago, is planning to construct a power house at Venice, to cost $1,200,000.

Tri-City Railway, Rock Island, Ill., has decided not to erect the planned carhouse in Moline, it was learned. The project would have cost the company $60,000. The company, after considering the matter for some time, decided it could not afford to undertake this construction at this time.

Fort Dodge, Des Moines & Southern Railroad, Boone, Iowa, is improving its property, especially at Boone and Fort Dodge. The W. J. Zitterell Company has been awarded a contract for the erection of a new carhouse at Boone. President C. H. Crooks of the Fort Dodge line has announced that construction has already been started on the new buildings which are being erected at Fort Dodge, replacing structures destroyed recently by fire. The contracts for the new carhouse and yard office were let recently. The buildings will be of modern construction, brick and concrete, and the total cost will be about $150,000.

Trade Notes

American Gear Manufacturers' Association will hold its seventh semi-annual meeting at the Mountain House, Lake Mohonk, New York, Oct. 25, 26 and 27. The first general session of the meeting will be on Oct. 25, when the new president of the association, George L. Markland, Jr., of the Philadelphia Gear Works will preside. On Oct. 26 A. W. Copeland of the Detroit Gear & Machine Company will preside over a special meeting of the automotive group for the discussion of conditions in that industry.

Norma Company of America, Long Island City, has placed contracts for the erection of the first unit of its new plant upon its property recently acquired at Stamford, Conn. The company's Stamford plant will be equipped for the manufacture of Hoffmann precision roller bearings, the American rights to which, as well as to all other Hoffmann products, were recently acquired by the company from the Hoffmann Manufacturing Company, Ltd., of Chelmsford, Essex, England. The plant will also be equipped for the expansion of the manufacture of Norma precision ball bearings. The company's present plant at Anable Avenue, Long Island City, will be continued for the production of Norma precision open-type annular ball bearings.

Elliott Service Company, 244 W. Forty-ninth Street, New York, has announced through C. W. Price, vice-president in charge of the public safety division, that there is now available for the electric railways interested in reaching the public with the safety idea a plan for bringing about the introduction of instruction in accident prevention in the public schools in their respective communities. According to Mr. Price, electric railway executives were among the first to realize that the problem of street accidents will not be solved until the safety idea has been brought into the home, and that this can be done most effectively by getting school children interested in safety. Because of the increasing demand for literature and other material which could be used to introduce this subject in public schools, Dr. E. George Payne, professor of education of New York University, and author of the first definite plan for safety instruction in public schools, has prepared a series of eighteen pamphlets for superintendents, principals and teachers, together with detailed instructions and suggestions for the introduction of safety instruction in the present curriculum in the school system. This entire series by Dr. Payne may now be secured by electric railways for introduction in the public school system in their respective communities as part of the complete public safety service of the Elliott Service Company. Dr. Payne's plan is now in use in the schools of more than 100 cities. It is said that its adoption has made it possible for the cities of St. Louis, Kansas City and Detroit to cut accidents to children practically in half. In recognition of his pioneer work in this field and because of the growing interest in the subject of school safety on the part of students and graduate teachers New York University has created for Dr. Payne the first collegiate chair in safety education.

New Advertising Literature

Southern Pine Association, New Orleans, La., has issued the ninth revised manual of standard wood construction. This edition contains the information needed to solve every-day problems in wood construction.

Roller-Smith Company, New York, N. Y., has issued bulletin No. 450, describing alternating-current switchboard instruments, and bulletin No. 560 on the "safety" circuit breakers Types "P" and "E."

Rome Wire Company, Rome, N. Y., has issued two pamphlets, one describing its special, extra-flexible electric welding cable and the other the new super-service junior cord, suitable for many applications. A booklet of twenty pages has been produced giving full information on the super-service cords and cables.

Ohio Brass Company, Mansfield, Ohio, has issued its 1924-1925 catalog, which is a substantially bound book of nearly 800 pages, with special diagrams on high-tension insulators, trolley line materials, rail bonds and tools, third rail insulators and car equipment specialties. The book contains a classified index to materials, a catalog number index and a code word index.

Uehling Instrument Company, Paterson, N. J., has issued a new bulletin, 116A, which illustrates three simple devices which, it is claimed, completely eliminate three troublesome elements of the CO_2 recorder. In other words, they permanently prevent fouling and corrosion of the CO_2 equipment and the tubing which conveys the gas sample to the instrument continuously. These three devices are known as the "Pyro-Porus" filter, the gas drier and the gas purifiers. The bulletin also illustrates the small bore seamless drawn tubing used for the gas sampling line. This gives high velocity of gas flow, resulting in quick response to the CO_2 recorder to changes in furnace conditions. This tubing is much easier to erect than pipe, which was formerly employed for the purpose, and practically eliminates all possibility of sampling line leakage, which is a common failing of sampling lines constructed of pipe instead of tubing.